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A Study of Certain Morbid Conditions of the Meatus Urinarius in the Female.

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INTRODUCTION.

IN many and important respects the urethra of the female differs from that of the male. These differences are functional, developmental and structural.

Functional differences are seen, in that whereas in the female the urethra serves only to conduct fluid from the urinary reservoir, in the male it is also a genital canal: in its development the female urethra corresponds only to the prostatic and membranous portions in the male, whilst structurally the arrangement of the tissues of which the canal is composed, differs markedly in the two sexes.

In spite of these differences, it has long been recognised that the resemblance between the anatomical structures of the two canals is much closer than appears at first glance, and in the course of this paper we hope to show that pathological conditions affecting the female urethra resemble, much more closely than has been suspected hitherto, certain well-known diseases of the male.

In the course of the routine examination of morbid tissues removed in the gynæcological department of St. Bartholomew's Hospital, we have been much struck by the great diversity in histological structure exhibited by the small tumours classed together under the name of urethral caruncles; an enquiry into the histological

characters of these tumours has led us to make a careful study of the structure and development of the urethra, and of certain glands found in its immediate neighbourhood, and intimately related to it. The results of our researches are embodied in this paper.

The Gross Anatomy of the Urethra.

The following account is based upon the study of material obtained from the *post-mortem* room. Twenty specimens have been examined which were in all cases removed within twenty-four hours of death; the ages varied between two months and ninety-six years. In addition to these, two specimens have been examined from full-term still-born children, and one specimen from a fœtus of seven months.

Dimensions. In the adult female, the urethra forms a canal with an average length of one and a half inches. Testut has measured it, *in situ*, in two frozen subjects, in one of these it measured thirty-four millimetres and in the other forty-one. These measurements correspond very closely with our own observations. The calibre of the canal is not uniform, the narrowest part is situated at the meatus, and from here it widens out to attain its greatest diameter a short distance below the neck of the bladder; beyond this it again narrows somewhat suddenly to its superior extremity. Thus the general shape is fusiform.

Even in the dead subject it is capable of great dilatation, a property which, as we shall show, is closely associated with the large amount of elastic tissue which enters into the composition of its walls. To what degree this dilatation should be pushed during life, opinions differ; Guyon believes it unsafe to go beyond thirteen millimetres, Simon has frequently dilated up to two centimetres with no ill effects, and Reliquet practises a dilatation of thirty millimetres.

Course. Traced downwards from the neck of the bladder to the meatus, the urethra follows a curved path, inclining downwards and forwards, following closely the direction of the anterior wall of the vagina. Two portions may be recognised, the one intrapelvic, lying above the superior layer of the triangular ligament and constituting four-fifths of its total length, the other extra-pelvic, lying below this membrane.

Relations. A detailed description of the external relations is beyond the scope of this paper, but one or two points which have an important bearing upon physiology and pathology must be considered.

First the relation between the urethra and the sphincter muscle of the vagina. Striped muscle enters to a considerable degree into the composition of its outer coats throughout the whole length of the

urethra. This striped muscle is derived from various sources; to a great extent from the sphincter vaginæ muscle, to a less extent from the muscles of Guthrie and Wilson and from other voluntary muscles of the perineum. A distinct investment of striped muscle, known as the external sphincter of the urethra, is thus formed around the other constituents of its wall. In the upper part the investment is complete, but below, where the urethral and vaginal walls adhere more closely to one another, the fibres are found only upon the anterior wall.

Secondly the relation to the anterior vaginal wall. The closeness of the union between these two structures varies greatly in different parts. In its upper fourth the urethra is but loosely attached to the vaginal wall, and rests upon a bed of cellular tissue which intervenes between the two structures, whilst in its lower three quarters the two are blended so intimately as to form one structure between the two canals, the urethro-vaginal septum.

Thirdly the venous plexuses. The plexus of Santorini above, and the plexus of veins surrounding the base of the clitoris below, lie in close relationship with the urethra, and, together with their communications, constitute an investment of venous spaces throughout the greater part of the length of the canal.

The Meatus. The meatus urinarius opens upon the summit of a small eminence, which is almost directly continuous with the anterior margin of the hymen. At the posterior border of this eminence is a tubercle, which marks the termination of the anterior column of the vagina. The forms assumed by this little eminence are various. Most often it appears as a crescent with two horns, and occupies only the posterior half of the circumference of the urethra; less often it presents two small labia, a right and a left; more rarely still it is seen as four small tubercles. Occasionally this eminence is ill-developed or entirely absent and the meatus lies at the bottom of a small depression, or on the other hand, it may be extremely well developed, forming a mass of vegetations beneath which the orifice is hidden. There is, therefore, no constant arrangement, but from observations upon a considerable number of women in the out-patient room, we conclude that the crescentic form is the commonest. The orifice of the meatus itself also varies in its form, sometimes it is a rounded dimple, sometimes a longitudinal slit, sometimes a star-shaped opening.

Around the meatus are seen a number of small apertures, the openings of glands; these are found on the borders of the meatus itself, and on the surface of the vestibule as far as the angle formed between this structure and the labium minus. A careful investiga-

tion has convinced us that, contrary to the usual description, these apertures are not the openings of Skene's tubules, but are the orifice of large peri-urethral glands. Skene's tubules usually open on the floor of the urethra some little distance from the meatus. If fine bristles be passed through the small openings above mentioned, they appear in the glands of the urethra.

The Neck. The superior opening or neck of the urethra enters the anterior angle of the trigone of the bladder; it is constricted and may be rounded or irregularly star-shaped. Between its two extremities, the canal runs a course which is gently curved, as already described. If sections be made at right angles to its long axis the canal is seen to form a slit which is transverse in its upper part, almost star-shaped in the middle, and longitudinal in its lower segment.

The Interior of the Canal. If the urethra be laid open by an incision along its posterior wall, the colour of the mucous membrane is found to vary greatly in different specimens; in some cases it is pale and almost bloodless, in others dark-red and deeply congested, and between these two extremes almost all shades of colour are found. Deeply congested red patches are sometimes seen around the orifices of the groups of glands; this condition we found once only in the twenty specimens examined. In this instance the urethra was removed from the body of a woman aged thirty-five, who died of pulmonary tuberculosis. She was in hospital for a short time only, and we were unable to obtain any exact clinical history; the notes, however, state that she "had for some time suffered from painful micturition." Microscopic sections made through these patches show an inflammatory condition of the mucous membrane, with much small-celled infiltration around the glands. We regret that we are unable to give an exact clinical picture of this case for we regard it as an instance of those "red and tender patches in the urethra" which have long been recognised clinically and have occasionally been confused with caruncles. It is more unfortunate that we cannot speak with certainty for, so far as we are aware, the morbid histology of this condition has not hitherto been described.

When the urethra is laid open, the constriction of the canal at the meatus is well seen, in the form of a distinct ridge, rising up above the level of the rest of the wall. From the ridge of the meatus a number of folds of mucous membrane arise, which run upwards in a longitudinal direction towards the bladder; these are close together at their origin and radiate outwards from one another as the wider part of the urethra is reached, and again converging towards the

neck, finally are lost upon the walls of the bladder. Their number is not constant but five are usually seen. Occupying the intervals between them are a number of shorter folds.

One of the larger folds differs markedly from the others, in that it is not obliterated by dilatation of the urethral canal; it arises at the ridge of the meatus in the centre of the posterior wall of the urethra, and is continued as a median longitudinal crest to the neck of the bladder; it is composed not merely of mucous membrane but contains also submucous tissue, and Testut regards it as the homologue of that fold which, in man, is prolonged backwards from the veru monatum.

In the neighbourhood of the meatus, the arrangement of the mucous membrane demands closer study, for intimately associated with the anatomical distribution are certain pathological processes, which we shall presently describe. In this region the longitudinal folds of the mucous membrane are united by a number of transverse ridges and thus numerous crypts or depressions are formed into which open large urethral glands. In some cases the crypts with their underlying glands become greatly distended forming saccules with wide mouths opening into the urethra. This condition is well illustrated in specimen 2 of our series of dissections and was thus described in our notes: "The cribriform arrangement of the mucous membrane between the origin of the columns at the meatus is well marked, cyst-like cavities are present, the size and shape of a large pea. These spaces are formed partly by the depressions of the mucous membrane already described, partly by the subjacent glands which have become greatly dilated. The largest of these spaces undermines the mucous membrane for nearly half an inch, and communicates with the exterior by a small opening situated between the vestibule and the left labium minus." Microscopic sections show that the walls of these spaces are lined by glands, and that the epithelium of the spaces themselves is of the glandular type.

We shall presently show that many of the so-called caruncles of the urethra are nothing more or less than granulomata, that they are often of microbic origin and that they are probably not infrequently due to gonococcal infection. It is in these dilated crypt-like spaces that many of the tumours arise. The mucous membrane by its cribriform arrangement offers an excellent nidus for the growth of such bacteria, and doubtless it is for this reason that granulomata are so often found around the meatus.

Skene's Tubules. As we have already stated, in the majority of the specimens examined the openings of Skene's tubules were found,

not upon the surface of the vestibule, but within the meatus. Careful examination reveals the fact, that each aperture is surmounted by a small hood-like fold of mucous membrane, so arranged that the orifice is rendered valvular and is protected against the stream of urine which flows over it.

The Urethral Glands. In addition to the depressions and cavities already described there is constantly present a number of minute orifices, the mouths of the urethral glands; these small orifices are arranged in well defined rows which lie parallel to, and between the longitudinal folds of mucous membrane. The ducts occasionally contain small stone-like bodies, in size and shape resembling a millet seed, and consisting of inspissated secretion in which, not infrequently, a deposit of calcareous matter has taken place.

The Blood Vessels lie for the most part in the deeper layers of the mucosa, parallel to one another in the long axis of the urethra. They communicate freely by branches which pass out at right angles. The internal pudic, the inferior vesical and the vaginal arteries, all contribute to the peculiarly rich vascular supply which the urethra possesses.

The Histology of the Urethra.

In order to study the normal histology of the urethra, we have made a microscopic examination of five specimens, taken from the bodies of females whose ages varied from eleven months to sixty years. We have cut sections in various directions of the several parts of each specimen, and we base our description upon this material.

The wall of the female urethra consists of three coats, the inner or mucous, the middle or submucous and the outer or muscular.

The Mucous Coat. The mucous membrane is continuous above with that lining the bladder, below with that clothing the vestibule. Ten or twelve layers of cells cover its surface, and vary somewhat in character and arrangement in different parts of the canal. At the meatus the arrangement is, in all respects, similar to that which obtains in the vestibule, the most superficial layer consisting of squamous epithelium, with flattened cells closely packed together without interstices; their nuclei are centrally situated and vesicular. In the deeper layers the cells are arranged more vertically. The deepest layer of all consists of cells which are cubical in shape with a relatively small amount of cell substance, and with their long axis at right angles to the underlying connective tissue. Their nuclei are distinctly oval.

As we trace the canal upwards towards the bladder the epithelium

lining the depressions gradually changes its arrangement and soon the superficial cells become definitely columnar. They rest upon many layers of rounded, somewhat elongated cells, with round or oval nuclei; these in their turn are supported by a layer of cubical cells.

As we approach the vesical end the cells covering the mucous membrane undergo considerable change of shape. The most superficially placed become markedly flattened conformably to the surface, the deeper layers still maintaining their original form. Where the urethra finally terminates in the bladder, the superficial cells are still more flattened and elongated, and present the form of long fibrils running parallel with the surface.

The arrangement of the epithelium then varies in different parts of the canal; the changes take place very gradually with no sharp line of demarcation.

Submucous Coat. Beneath the basement membrane lies a loose-meshed, wavy, connective tissue, with scattered rod-shaped nuclei. The wavy course of the bundles is very striking, and sections stained by orcein show that the arrangement depends upon the quantity of elastic fibres in the stroma, a quantity much greater, we venture to think, than is generally supposed. This point is interesting when we consider the capacity for dilatation which the canal possesses, extreme dilatation being usually followed by no ill effects.

The submucous tissue is very vascular, capillaries and large blood spaces abounding. Some of these are situated close to the epithelium, occasionally encroaching upon the basement membrane. Some of the large vessels are surrounded by scattered bundles of smooth muscle fibres. The capillaries are especially numerous around the glands, which are abundant in this region.

Each gland has a number of branches, communicating with the surface by a common duct. Surrounding each is a vascular zone of capillaries and blood spaces. A basement membrane lies within this zone upon which rest the glandular cells; like the epithelium of the urethra these consist in their deepest layer of almost cubical cells, with large oval nuclei and comparatively little cell substance. Superficially are ten or twelve layers of cells which are rounded and possess well-staining vesicular nuclei in the deepest layers, but become cylindrical with elongated nuclei as the centre of the gland is reached.

The glands have usually a distinct lumen but occasionally they appear in section as solid masses or columns of cells. They are found throughout the whole length and circumference of the canal and are not limited to the posterior wall as some authors have stated. They

are especially numerous towards the meatal orifice, but form a striking feature of sections from any part of the urethra.

Cysts of the anterior vaginal wall, quite apart from the urethral diverticula described by Dr. Amand Routh and others, occasionally arise in connection with these glands. We have examined a small cyst, the size of a marble, removed from the anterior vaginal wall in the neighbourhood of the urethra, and the sections show that it is lined by epithelium similar in all respects to that which is found in the glands. This condition may possibly originate from occlusion of the duct.

In 1880 Skene drew attention to two small tubes, which run parallel with the urethra for a distance of $\frac{1}{2}$ to $\frac{3}{4}$ of an inch, and open in the immediate neighbourhood of the meatus. At their distal extremity they break up into a number of glandular branches. Skene believed them to be of great importance in certain inflammatory conditions of the urethra, and regarded them as the focus of reinfection in cases of recurring attacks of urethritis.

These tubules we have found to be almost constantly present, they open on to the floor of the urethra, on either side of the crista at a variable distance from the margin of the meatus, most frequently within $\frac{1}{3}$ of an inch of, but rarely upon, the meatal lip. The orifice of each duct is guarded by a hood-like fold of mucous membrane, and a bristle pushed into the small opening, passes usually from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch into the muscular coat.

Sections of the urethra cut longitudinally, show that these ducts are lined by epithelial cells, which possess all the characters of those found in the urethral glands. The number of Skene's tubules is usually, but not constantly two, occasionally one only is found, still less frequently three are present. Testut in an examination of 90 subjects found a right and left in 83, one only in four, and entire absence in three.

D'Almanoff has made a special study of these structures; he finds that they are often present in the new-born and occasionally in the fœtus, that they reach their maximum size in adult life and atrophy after the menopause, that they hypertrophy during pregnancy and involute during the puerperium. Atrophy after the menopause is certainly not a constant phenomenon, we have on several occasions found the tubules well developed in women of advanced years.

Much controversy has raged around the origin and meaning of these canals, some anatomists believe that they represent the persistent lower end of the Wolffian ducts, and are thus homologous with

the duct of Gartner; this view we regard as untenable for the following reasons:—

1. That these tubules are often absent in the new-born and apparently develop later in life; this is the only possible explanation of the fact that they are frequently absent from the urethra of the newly-born but only very rarely from that of the adult. If they were the persistent remains of an atrophying fœtal structure, we should expect to find the converse.

2. That their position does not correspond with that of a persistent Wolffian duct; this structure should open into the vagina not into the urethra, and above, not below the hymen.

3. That the occasional presence of a third median duct cannot be reconciled with a Wolffian origin.

4. That the epithelial lining has nothing in common with the parovarium, or with Gartner's duct, but exactly resembles that of the urethral glands.

The balance of evidence then is overwhelmingly upon the side of those observers who regard Skene's tubules as modified urethral glands; for in their structure, their situation and their development they are identical with these bodies.

Muscular Coat. Surrounding the submucous layer is a stratum of smooth muscle fibres which constitutes the muscular coat. Although the latter forms a general investment for the submucous layer, there is no marked line of demarcation between the two, some of the muscular fibres encroaching upon the submucous tissues so as to encircle the glands. Scattered between the bundles of muscle are many arterioles and large blood spaces, the whole tunic being very vascular. Two layers of muscle are usually described, an inner longitudinal and an outer circular. But in addition to these we have found in many cases, at the vesical end of the urethra, a second layer of circular fibres within the longitudinal coat. It is a noticeable fact that the inner longitudinal layer is much more vascular than the outer circular layer. Surrounding this smooth muscular coat, there is the stratum of striped muscle fibres which we have described above.

The Female Prostate.

In no part of the organism are the sexual differences so marked as in the urino-genital tract, nevertheless if we study the development of this region it becomes clear that there is at one stage a common type, and that by modifications of this type the ultimate sex differences are produced.

The Wolffian and Müllerian ducts, the mesonephros, the genital eminence, the uro-genital sinus, are capable of most diverse modifications; structures which, in the one sex undergo complex development, in the other sex become atrophied and as far as we know functionless; but it may be laid down as a general law that every portion of the primitive apparatus is represented in the adult, and no structure is present in the one sex which has not its homologue in the other.

The Wolffian duct is functional in the male and forms the sperm canal; the Müllerian duct forms the oviduct in the female; the Wolffian canal persists however in the female as a functionless structure—the duct of Gartner, and traces of Müller's canal are found in the male.

The proximal portion of the male urethra is surrounded by a mass of muscular and glandular tissue which we term the prostate. Is this organ represented in the female?

This question is best approached from the side of embryology, and to assist in its solution we have examined serial sections from two young embryos.

By the time gestation has advanced two-and-a-half months the urethra is well formed and can be easily identified, and about this period small bud-like projections are seen growing out from its walls. These buds are found in both sexes, but whereas in the male they undergo considerable development and eventually form the glandular portion of the prostate, in the female they remain small but persist throughout life as the peri-urethral glands.

Tourneux—in the *Comptes Rendus de la Société de Biologie* for 1888—has published a series of interesting observations on the fate of these bodies. By the fourth month, in the male they have increased considerably in size, whilst in the female they have undergone no further development. By the fifth month, in the male they have become covered with secondary buds and the largest branches possess a lumen. In the female they as yet show no sign of branching. In the sixth month sections from a male fœtus show that the glands have become separated from the urethra in their deeper parts, that they possess distinct ducts and are embedded in muscular tissue. In the female, at this period, the glands are numerous, excavated near their orifices but still solid in their deeper parts, whilst some are ramified.

The history of their development thus teaches us that the peri-urethral glands in the female are the homologue of the prostate in the male.

Testut has given an admirable account of these glands and to his

description we have nothing to add: "Whatever be their form or their situation, these glands always show the same structure. They are epithelial masses rounded or tubular, simple or lobulated. Their walls, usually rather thick, measure in certain cases 120—150mm. They are formed of small cells rounded or elongated perpendicularly to the surface, tightly packed together and cut off from the boundary of the central lumen, perhaps by pavement cells, perhaps by a layer of prismatic cells, resembling exactly those of the urethral mucous membrane. Morphologically these glands present a very close analogy with the prostatic glands, but they have become arrested in their development. Together they constitute a female prostate—a prostate always spread out over a considerable area and always rudimentary."

But it is not only in its development and in its structure that the prostate of the female resembles that of the male. We shall show in the course of this paper, that in the two sexes we meet with similar pathological conditions. Multiple prostatic calculi are of common occurrence in the male; we shall record a case in which we met with this condition in the peri-urethral glands of an elderly woman—similar observations have been made by Virchow, Clarence Webster and others.

Prostatic adenomata are frequently met with, and we shall describe a urethral caruncle which consisted almost entirely of adenomatous tissue.

Further, we hope in a subsequent communication to record two cases which have recently been under our observation in which we believe the patients to have been the subjects of primary carcinoma of the peri-urethral glands.

On Urethral Caruncles.

The earlier writers, who have given descriptions of urethral caruncles, have grouped these tumours amongst the papillomata, the angiomata, or the mucous polypi; and until the year 1894 one or other of these classifications was almost invariably accepted.

In that year Neuberger made a careful microscopic examination of the tumours removed from twelve consecutive cases, and in each instance he found the structure was that of a granuloma. These very contradictory statements are surprising. Many distinguished pathologists, including Virchow, regarded caruncles as innocent new-growths. Neuberger's researches showed them to be of inflammatory origin. What is the explanation?

As we read the accounts of the earlier writers, we find that their descriptions are based upon the examination of a single specimen or

at most of only a very limited series, and the fact that these small urethral tumours may, both in their origin and in their histological characters, differ widely from one another is not recognised. As we shall presently show both new growths and granulomata are met with but the new-growths are undoubtedly the commoner; hence it is puzzling to read that Neuberger, in a series of twelve consecutive cases, met with granulomata only.

An explanation is found when we examine the source from which he obtained his material. We shall show later that the granulomata are closely associated with chronic infections of the urethra, especially with gonococcus infection, and Neuberger's specimens were all taken from a class of patient in which this infection is endemic.

It is clear then, that if we are to obtain accurate knowledge of the histology of urethral caruncles, we must examine a series of cases and not draw our deductions from a few isolated instances. Such a series has already been reported by Lange. Between the years 1898 and 1901 he noted the conditions of the meatus urinarius in a thousand women, in 58 of whom caruncles were found; all were excised for examination, thirty-nine were new-growths, and nineteen were granulomata.

We have examined caruncles from fifteen consecutive cases, and we base our description upon a study of this material. Our observations have led us to believe that all so-called vascular caruncles may be grouped into one of two classes:—

(*a*) Granulomata—undoubtedly of inflammatory origin.

(*b*) A group of *innocent new-growths* of much more doubtful origin, and of very varying histological characters. These new-growths are composed of tissues similar to those which occur normally in the neighbourhood of the meatus urinarius; they possess: (1) an epithelial covering; (2) a basis of connective tissue in which are embedded (3) glands having the characters of the peri-urethral glands, and (4) large and numerous vascular spaces.

It is in the arrangement and relative proportions of these tissues that the caruncles show such marked differences.

We propose to describe the histological characters of the specimens which have fallen into our hands, to recount certain observations we have made upon their ætiology, and to inquire if it is possible to associate the very varying clinical symptoms to which they give rise with differences in their histological structure.

Caruncles of the urethra have been recognised by surgeons for at least a hundred and fifty years. Sharp in his " Critical enquiry into

the present state of surgery," published in 1750, says: "Small excrescences may occasion violent disorders in so tender an organ as the urethra. I have seen a notable instance in the urethra of a virgin where they grew in small quantity upon the orifice of the meatus urinarius and for many months had produced the most excruciating torment which continued until I had totally extirpated them." In the same year Morgani in his notes of the *post-mortem* examination made on the body of a girl fifteen years of age, writes: "In urethrae osculo corpusculum prominebat rubellum."

The term "papillary polypus" was applied to these growths by Simon, in 1850, and in 1855 Verneuil described their extreme vascularity. The misleading term "urethral hæmorrhoid" was used by Richet in 1872 and Hutchinson in 1874. Virchow, our great master in cellular pathology, found time to examine these small tumours and pointed out that in many instances they differed from true telangiectases, in that the lumen of the vessels was not dilated nor the walls thickened.

Skene, writing in 1889, recognised marked differences in structure and proposed an elaborate classification arranging them into six groups; many other authors have written valuable and interesting monographs, amongst which we may mention those of Englisch, Neuberger, Philipsthal in Germany, Répiton-Préneup in France, Lawson Tait, Martin and Herman in England; and lastly the most recent and in many ways the most complete, a paper published in 1903, by Lange of Königsberg.

Histological Characters.

(*a*) *Granulomata.* We have already drawn attention to the anatomical arrangement of the mucous membrane which clothes the floor of the urethra in the immediate vicinity of the meatus. This arrangement has, without doubt, an important influence upon the origin of granulomata in this situation. Three points must be noticed: First, that the posterior lip of the meatus is raised into the form of a distinct ridge, and that this, together with the marked narrowing which occurs in this portion of the lumen prevents the free and complete escape of any urethral discharge which may be present. Secondly, that the longitudinal folds of the mucosa are here united by ridges which pass across transversely and so constitute a series of large pits or depressions. Thirdly, that at the bottom of these depressions are found groups of urethral glands.

These factors all combine to render the tissues immediately behind the orifice a nidus particularly favourable for the arrest and

development of micro-organisms, and it is in connection with these depressions that granulomata arise. They form small, not infrequently pedunculated tumours, usually red in colour often ulcerated on the surface. When touched they are sometimes exquisitely tender, sometimes almost insensitive. We have examined four such tumours and found their histological characters as follows:—

The greater part of the section is occupied by a mass of dense, small-celled infiltration, and embedded in this are numerous thin-walled capillaries; these vessels are found in all parts of the tumour, and are remarkable for the number of leucocytes seen in their interior; around these capillaries the small-celled infiltration is denser than elsewhere. Towards the base a few urethral glands are seen, but we have not found the marked proliferation of these structures, which is so striking a feature of some of the new-growths we shall immediately describe.

The epithelium covering the tumour is in some instances squamous and consists of many layers, but in one of our specimens entirely different appearances were seen. The surface was here raised up into a number of papillary processes; in the depressions between the papillæ was an epithelium consisting of several layers of rounded and polygonal cells resting upon a layer of cubical or columnar cells; whilst the papillæ themselves were covered by a single layer of columnar cells. (Fig. 1.)

This structure differs little from that of granulomata found in other parts of the body and indicates clearly the inflammatory nature of these tumours. Neuberger's observations already quoted indicate the lines along which we should investigate their origin; we believe them to be the result of infection by various organisms, which in some instances gain entrance from the vagina, whilst in other cases they are arrested in the crypts of the meatus on their passage downwards from the bladder.

That stagnation and decomposition of urine does sometimes occur in these crypts is well shown in a dissection which we made of the urethra removed from the body of an elderly woman; in this we found the depressions on the floor of the urethra occupied by many small phosphatic masses. The organism concerned in the majority of cases is probably the gonococcus; thus Lange investigated the condition of the genital secretions in four cases from which he had removed granulomata, and in three of them he was able to demonstrate gonococci. We have not been able to follow this line of investigation in our cases, but have stained a number of sections by

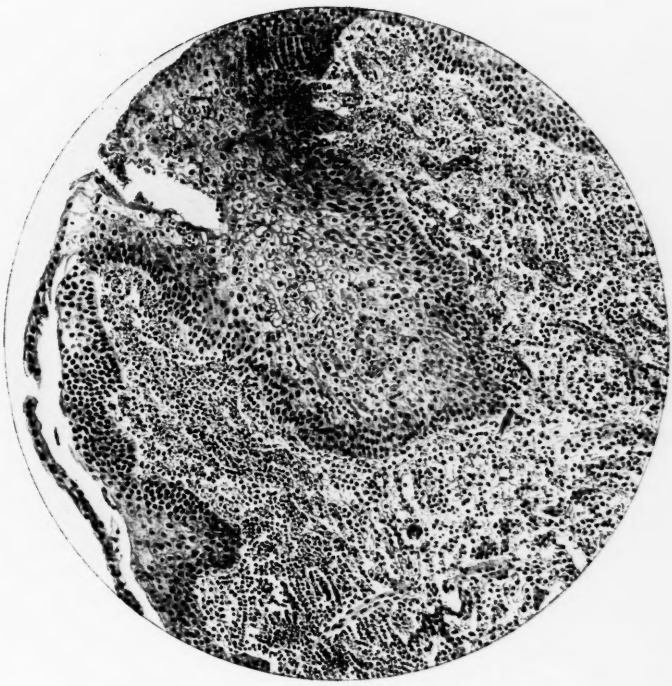

FIG. I.—Urethral caruncle composed of granulation tissue, covered by squamous epithelium.

the methods used in bacteriological research. In these we always found organisms but were unable to identify the gonococcus.

(*b*) *Caruncles of the nature of new-growth.* We have already stated that very varying histological characters are met with, and that elaborate classifications have been proposed; these appear to us, however, to be needlessly complex. If we bear in mind the anatomical features of the tissues around the meatus, and the fact that these small tumours may contain any, or all of these tissues in varying proportions, subdivision into angiomata, papillomata, and adenomata becomes a question of degree rather than of kind.

We propose first to describe the structure of what we regard as perhaps the commonest form of caruncle, and to point out the chief variations from this type.

The surface is covered by a stratum of epithelial cells, which sometimes resemble very closely the epithelium of the vagina, sometimes that of the urethra, but most frequently the epithelium is clearly of the transitional type. The number of layers of which it is built up differs in different parts of the same tumour.

Lange states that in the neighbourhood of the stalk the layers are few and ill-developed, but we have seldom been fortunate enough to obtain the pedicle entire, and so are unable to confirm this observation. One of the most striking features of the epithelium is its marked tendency to proliferation, numerous papillæ are seen on the surface and into these papillæ the underlying-connective tissue sends ramifying processes; down-growths, too, are present in the form of solid columns of cells, sometimes attached only by a slender stalk so that it is often difficult to trace their connection with the surface.

The superficial layers of cells are squamous and flattened conformably with the surface, the deepest layer is cubical or columnar, and between these two extremes round and polygonal forms are found; in the depressions between the papillæ, however, cubical and columnar cells are often seen on the free surface. Superficial ulceration is common, sometimes with round-celled infiltration, sometimes with shedding of epithelium In addition to this inflammatory condition other forms of degeneration are present in these layers, the cells often become vacuolated, lose their distinct outline and stain badly; these areas of degeneration are scattered over the surface, and give rise to small cyst-like spaces which have been carefully studies by Lange. He concludes that the cysts have not been artifically produced by hardening reagents, because of their regular contour and the grouping of the epithelial cells around them; they contain leucocytes and in addition rounded or oval structures which do not possess a nucleus;

these bodies are vacuolated and represent hyaline degeneration of epithelial cells; they are not peculiar to caruncles but are found in any actively growing epithelium, in carcinomata for instance. (Fig. 2.)

Such, in broad outline are the characters of the surface epithelium, but variations are common. In one case (Specimen No. 10) we found the surface of the papillæ covered with columnar epithelium; in this specimen the epithelial down-growths were a very striking feature, columns of cells were cut across in all directions, so that at first glance they suggested the possibility of malignancy; in other cases (*e.g.*, Specimen No. 6) the epithelial proliferation was only very slight.

The ground-substance of these tumours consists of connective tissue; we have never found elastic fibres in them, and unstriped muscle is found only at their base of attachment, and is probably a part of the adjacent urethra rather than of the tumour. This fibrous tissue presents striking differences in its arrangement, sometimes it is found in closely set wavy bundles (Specimen 1), sometimes loose-meshed and closely resembling myxomatous tissue (Specimen 14), often degenerate and containing between the bundles and between the individual fibres small round cells.

These are present in greatest numbers in definite situations, beneath the surface epithelium, around the glands, and around the vessels and blood spaces. Caruncles of this type are liable to become inflamed, and in such cases there is a general dense infiltration of the whole connective tissue. One of our specimens (No. 14) illustrates this condition well—the caruncle consisted of two lobes, one showed a general dense infiltration, whilst in the other only a few round-cells were found and these in the situations already referred to.

Every caruncle of this nature examined by us contains glands, sometimes relatively few, sometimes present in such numbers that the term adenoma may well be applied to the tumour; when scanty they are often dilated and form cyst-like spaces lined with a varying number of layers of epithelial cells and showing in section a simple tubular arrangement; when numerous they form almost solid masses of epithelial cells with a branching racemose distribution.

We have pointed out elsewhere the striking and indisputable analogy between the peri-urethral tunic in the female and the prostate in the male, and have shown that their development renders it certain that they are morphologically the same structure; following this line of argument we cannot fail to be struck by the analogy

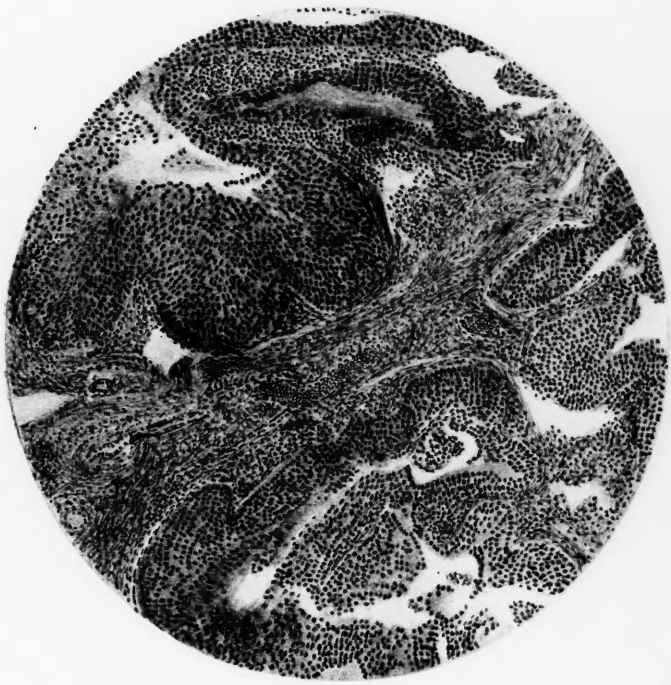

FIG. II.—Section of a urethral caruncle which consists chiefly of glandular tissue.

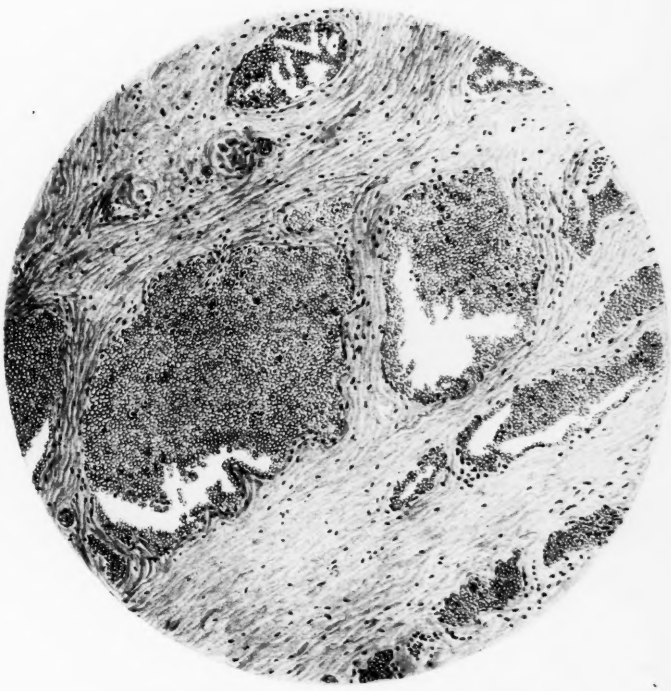

FIG. III.—Section of a urethral caruncle consisting of large blood channels separated from one another by dense fibrous tissue.

between these glandular growths in the female and the well-known prostatic adenomata of the male.

The glands are surrounded by circularly disposed, closely-set connective-tissue fibres, their epithelium resting upon a delicate basement membrane. The epithelial cells vary in form and size, the deepest layer consisting of cubical cells with a large oval nucleus and comparatively little cell-substance, the intermediate strata of rounded and polygonal cells, and the superficial layers of cells sometimes flattened, sometimes elongated and sometimes clearly prismatic or columnar.

These features are well seen in one of our specimens (No. 2). Beneath the surface epithelium is a stroma of closely-set fibrous tissue, and embedded in this are glandular masses showing great epithelial proliferation. In most places a distinct lumen is visible, but in some parts the epithelium is arranged in solid columns; the glands have an alveolar branching form and the acini are separated from one another by strands of fibrous tissue. The cells are many layers deep, for the most part rounded or polygonal but with a deeper stratum of cubical form and a superficial stratum of tall prismatic cells. The lumina of the glands always contain numbers of epithelial cells and a quantity of structureless débris.

The blood vessels in many cases form the most striking feature of the tumour and in their structure, their arrangement and their number, present marked variations in different specimens. (Fig. 3.) As already stated Virchow pointed out that dilatation of the lumina and thickening of the walls were not present, and from the lack of these features he declined to group them with the angiomata. Of many specimens this is true but occasionally we find cases in which the walls are markedly thickened and the lumina widely dilated. Lange lays special stress upon this point and makes it the basis of his classification. He believes that this type of vessel is found only in those caruncles which possess a flat non-papillary epithelium and would reserve for these the name of "angioma," whilst to those which possess marked papillary epithelial processes and normal vessels, he applied the term "hypervascularized papillary mucous polypi." This classification seems to us artificial and, we cannot in our specimens distinguish these two well-marked types; we have met with caruncles possessing a flat epithelium with normal vessels, whilst others, with well-marked papillary processes, show vessels with dilated lumina and thickened walls.

The vessels have an irregular distribution but are usually especially abundant immediately beneath the surface epithelium and around

the glands. In size they vary from small capillary loops to large dilated spaces resembling closely the erectile tissue of the corpus spongiosum, and in some instances constitute by far the greater part of the tumour. We have noted in many instances an unusually large number of leucocytes in their lumina even when the tumour itself showed no evidence of inflammation.

Many of the spaces possess an endothelial lining and beyond this no definite wall; they lie embedded in the connective tissue stroma, the fibres of which are frequently arranged around them in a concentric manner. In others, definite muscular walls are present which occasionally exhibit marked thickenings. Hæmorrhage into the tissues is common, doubtless in some cases due to injury during removal, but the presence of altered blood corpuscles and hæmatoidin crystals proves that these hæmorrhages occur also during the life of the tumour.

The study of the vascular elements naturally raises the question as to whether these bodies are erectile. That they are capable of increase in size as the result of congestion is indisputable; Lange had the opportunity of watching the effects of labour upon a caruncle and he writes: "A tumour four centimetres in diameter was evolved out of an insignificant structure and, after the tumour was removed, so much blood trickled from the thin stalk that its volume was reduced to a third."

Whether an increase in size occurs during menstruation is more doubtful; this phenomenon is described by Scanzoni and by Medora, but in none of the cases do they give any account of the histology of the tumour. We have frequently enquired of the patient whether she has noticed any additional inconvenience or swelling during the menstrual period, but the answer has been invariably in the negative. Nor have we any evidence of a vaso-motor mechanism; we were unable to bring about an increase in the size of the tumour by mechanical irritation, and in two cases in which we applied adrenalin chloride to the surface no appreciable diminution occurred.

It had long been recognised that of two caruncles which presented to the naked eye almost exactly the same characters, one might be excruciatingly painful and the other painless. We have endeavoured to ascertain if these sensory phenomena can be associated with differences of anatomical structure. Scattered through the older literature we find references to the presence of nerves, Littel in 1880 and Liell in 1894 claim to have found them, but their reports are by no means convincing and, of the many workers who have employed

the more recent and exact methods of histological research, not one has succeeded in demonstrating them.

We have selected for this purpose painful caruncles, and have prepared and stained sections in various ways; we have employed the silver nitrate method, the gold chloride method, and the osmic acid method of Ramon y Cajal, but in no case have we found any nervous tissue. Nor have we found that pain could be associated with any special arrangement of the histological elements we have already described, hence we are quite unable to associate the presence or absence of pain with any anatomical structure.

No satisfactory explanation has yet been advanced. Neuberger and Répiton-Préneuf believe pain to be a purely subjective phenomenon and to occur only in persons of "exalted nervous tension"; Fritsch regards it as due to the compression of the base of the caruncle by the stream of urine, or to compression during coitus; Philipsthal makes the site of attachment of the caruncle responsible for the pain, and points out that the nerve supply of the urethra becomes progressively richer as we pass from the meatus to the neck of the bladder; whilst Lange believes that it depends upon the condition of the urethral mucous membrane and that painful caruncles are usually associated with urethritis. He states that in his cases pain on micturition never disappeared on mere extirpation of the caruncles; "this end," he writes, "was much more often attained by treating the complications, and from this we see that the caruncles have nothing to do with this point, and other lesions of the urinary organ everything." With this conclusion we are totally unable to agree, in the majority of our cases pain was at once relieved by the removal of the caruncle; nevertheless we believe that the explanations suggested by Philipsthal and Lange offer the nearest approach to a solution of the difficulty which has yet been put forward. It is easy to believe that conditions which are painless in a healthy mucous membrane may become painful in one which is inflamed; this is well illustrated by the pain which ensues when an inflamed cervix is seized by a volsellum, a procedure which in a healthy cervix is quite painless; moreover we not infrequently meet with caruncles which at the time of investigation are painless and yet the patient volunteers a history of recent dyspareunia or dysuria.

As to the origin of these tumours there is little positive evidence to be adduced. Englisch has described in the urethro-vaginal septum small scattered cysts filled with jelly-like contents; these cysts he has found in still-born children and in children who have died a few weeks after birth, on one occasion he found them also in a $6\frac{1}{2}$ months

fœtus. He believes that caruncles may arise from hypertrophy of papillæ present in such structures. We have on several occasions found in the adult as well as in the child, cysts of the characters he describes, and we see no reason for regarding them as anything more than retention cysts. The epithelium in many cases clearly is of the same type as that of the peri-urethral glands, though in some instances more or less altered by pressure. That these bodies bear any causal relation to caruncles is a matter of pure conjecture and entirely destitute of any proof based upon scientific observation.

These tumours must be regarded as innocent new-growths of the peri-urethral tissues; of the laws which govern their development we have no knowledge. We know that they are frequently accompanied by other morbid conditions of the surrounding parts, but whether the relation is that of cause or effect we cannot tell.

Clinical Characters.

During the last ten years 72 patients suffering from urethral caruncles have been treated in the wards of St. Bartholomew's Hospital. From an analysis of these cases we have drawn the following conclusions.

Age of the patients. Urethral caruncle is a disease occurring most frequently in middle life. The majority of the cases are met with in the fourth, fifth and sixth decades, very few under the age of 20 and over the age of 60. In this particular series the age incidence was as follows:—10—20 years, 1; 20—30 years, 10; 30—40 years, 19; 40—50 years, 14; 50—60 years, 20; 60—70 years, 7; 70—80 years, 1.

Influence of child-bearing. The disease occurs more often in women who have borne children than in those who have not; in this series, 44 patients were multiparæ, 28 nulliparæ.

Position of the caruncle. In 42 of the cases it is definitely stated that the growth was situated upon the posterior lip of the meatus, in only two was it noted upon the anterior.

Associated conditions of cervix vagina and vulva. In the most recent cases a careful note has been made of the exact condition of the cervix vagina and vulva in each patient suffering from urethral caruncle. In 39 cases some abnormal condition was found, in some instances an erosion of the cervix, in others chronic vaginitis or vulvitis, whilst in a third group a discharge was present, the cause of which was not ascertained. It is noteworthy that these growths are so frequently associated with conditions which tend to keep the vulva bathed in abnormal secretions, and it is possible that these

secretions convey organisms to the urethra which, multiplying therein, become the *fons et origo malorum*.

Symptoms. The symptoms most commonly complained of are connected with micturition. There is usually pain either during or following the act, commonly accompanied by a desire to frequently empty the bladder; this was present in 55 cases. In 29 instances there was pain on walking and sitting, in 19 dyspareunia, and a symptom occasionally met with was pruritus vulvæ.

Recurrence. In 13 cases the growth recurred after removal and in a few instances more than once. In a subsequent communication we hope to report two cases of primary carcinoma of the urethra or peri-urethral glands, and in each of these a "vascular caruncle" had been previously removed.

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Notes on a Case of Spontaneous Rupture of the Uterus during Pregnancy through the Cicatrix of a Cæsarean Section Wound, with a brief reference to similar recorded cases.*

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The following is the history of the case which forms the subject of this communication.

Mrs. M., 4-para, was admitted to the Glasgow Maternity Hospital on January 26th, 1904, with a view to having Cæsarean section performed for the second time. Two years previously I delivered her of a living male child by Cæsarean section. Here are my notes of the case on that occasion: "Mrs. M., 3-para, was admitted on October 28th, 1901, to the Glasgow Maternity Hospital. In both the previous labours the children were extracted with difficulty, and were dead. On the last occasion craniotomy had to be performed. The pelvis was of the flat rachitic type, the diagonal conjugate being $3\frac{3}{4}$in." There seemed to be little if any deformity in the transverse diameter. She was not in labour when admitted but it came on 12 hours afterwards. I intended to do symphysiotomy, and so allowed labour to go on until the os was fully dilated; when however, that stage was reached it was found on examining her and testing the relative sizes of the head and the pelvis that there was too great a disproportion between them to permit of symphysiotomy being done safely. I therefore chose Cæsarean section and employed the "fundal incision" of Fritsch. I came right down on the placenta, which I removed before extracting the child. The child, which weighed 8lbs., was extracted very easily, and the uterine wound stitched with little trouble or bleeding. She was not sterilized. She had a good deal of retching and vomiting during the first three days, but otherwise there were no unfavourable symptoms. The temperature was never above normal, and the pulse after the first three days was not accelerated. The wound healed by first intention, the stitches being taken out on the fourteenth day. She left the Hospital on November 30th, both she and her baby being perfectly well.

* Read at a meeting of the Glasgow Obstetrical and Gynæcological Society, May 25th, 1904.

The following note was made on her admission for the second operation. As far as can be judged the patient is now in her 37th week of pregnancy, she has maintained good health and has suffered no special discomfort since she became pregnant. She is well nourished and of good colour, her pulse is of good tension, regular in force and rhythm and numbers 84 per minute. The abdomen is irregularly enlarged, the bulk of the swelling being to the right side. There is a mediam firm scar of the previous Cæsarean section. Fœtal movements are active but the cardiac sounds are nowhere audible. The cervix is not taken up but admits the tip of one finger.

After an enema, given about midnight, the patient complained of abdominal discomfort—slight pain in the epigastrium; this extended upwards and to the right. She mentioned this to the night nurse, but as she did not complain further and fell asleep the nurse did not think it necessary to report the fact to the House Surgeon. She slept from about 12-30 till 5 a.m., at which time a sanguineous discharge from the vagina was noticed and slight pain in the right iliac region was complained of. At 7 a.m. the temperature was 97·6° and the pulse 80; the pain which had now spread over the abdomen was not very great, so it was taken for painful uterine contractions. There was no sickness or vomiting. At 11 a.m., on making my ward visit, I spoke to the patient quite by accident, for no one considered her condition serious. I then found that there was considerable abdominal tenderness and suggested to those present the possibility that the old uterine cicatrix had given way. As, however, the pulse was 84, regular, and of good tension, I simply advised my House Surgeon Dr. Rodgers to go into the case and note the patient's condition carefully. An hour afterwards I was summoned by him as the abdominal tenderness was now more marked, the pulse 90, the temperature subnormal and the breathing more rapid. At this time the condition of the abdomen was as follows: She lay with her feet slightly drawn up; on palpation there was exquisite tenderness over the whole abdomen, more marked to the right and below the umbilicus; the pain also extended up to the right shoulder. On placing the hand over the abdomen one was struck by the readiness with which the fœtal parts could be defined; above the umbilicus and slightly to the left of the middle line a limb could be made out, while the head lay towards the left iliac fossa. Two tumours could not be differentiated; percussion gave a slightly dull note in the flanks. On vaginal examination the tip of one finger could be pushed through the cervix, but the presenting part could not be felt; on withdrawing the finger it was blood-stained. The pulse numbered

88. A $^1/_{60}$ of a grain of strychnine was given and the patient prepared for laparatomy. She was anæsthetised and the abdomen opened along the previous incision. Immediately that was done a large quantity of dark-coloured blood escaped and the intact membranes and placenta with the enclosed fœtus presented. The uterus lay retracted behind and down towards the pelvis. The membranes were opened into and a full-time dead child extracted. The uterus was then examined and found to have a transverse rupture extending over the highest part of the fundus evidently through the cicatrix of the wound of the previous Cæsarean section. There were only two slight adhesions, one to the omentum and one to the abdominal wall. The uterus was removed by supra-vaginal hysterectomy, the peritoneum being carefully brought over the stump. Finally all blood clot was removed, and fully two pints of saline solution were introduced into the peritoneal cavity. After the operation the patient was considerably depressed; the lips, cheeks, and extremities were blanched; the pulse was 126, small, easily obliterated but regular. She soon improved however; the following day the pulse was 120 and the temperature 98°. I need not trouble you with details of her progress which was very satisfactory, except that on the second day after the operation she was troubled with a good deal of bronchitis, and on the third day had a faint, which however, was relieved by the administration of strychnine hypodermically and sal volatile by the mouth. She was dismissed a month after the operation perfectly well.

The case just described is one of peculiar interest and that from several standpoints. From the report you see that the true nature of the condition was at first not quite fully appreciated. I was inclined to think that the rupture was incomplete and that the adhesions which I presumed were present, but which did not exist, were limiting any effusion of blood. In this I was wrong, there was a large effusion of blood into the peritoneum and the whole ovum was free in the abdominal cavity. In two other recent cases of complete rupture very much the same features were present—only a slight alteration of pulse tension and rate, but no collapse. It is well to remember this for one is apt to consider complete collapse an essential feature of the accident. The rupture, without doubt, was right through the old cicatrix. The wound simply gave way. It did so, I doubt not, quite quietly, the child being slowly born through the rent.

On reading such a case as the one just described several questions naturally arise to one's mind: (1) Did the fact that the incision was a fundal one predispose to rupture. (2) Was there anything in the

uterine wound at the previous Cæsarean section which favoured the rupture. (3) Is the danger of rupture of the cicatrix such that one should condemn non-sterilization.

As regards the first of these questions it does seem, *prima facie*, highly probable that a fundal cicatrix is more liable to give way than an ordinary longitudinal one, and that chiefly because with the latter there are adhesions to the abdominal parieties acting as firm supports. I would therefore now never employ a fundal incision if I were going to leave the uterus behind. As a matter of fact the incision of Fritsch possesses few advantages, and this I pointed out in a paper read before the British Medical Association at Manchester in 1902.

That what I have said is probably correct is borne out by the fact that in another case, on which I performed the operation for the second time, I found my old cicatrix, which was fundal, thinner than the other parts of the uterine wall. This uterus has already been shown to you, but I have again placed it on the table to-night. In this case there was no trouble during pregnancy. I operated after labour had been in progress for a little time, removing the uterus after extracting the child. The patient's recovery was uninterrupted.

So far I have been able to find only one case of rupture through a fundal cicatrix. It is reported by Meyer (*Zentralblatt für Gynäkol.*, 1903, p. 1416). This operator found on opening the abdomen that the old fundal incision had given way, and that the placenta was projecting through the rent.

With regard to the second question—was there anything in the uterine wound at the previous Cæsarean section which favoured the rupture—I think I will be able to bring out rather an important and interesting point. Perhaps you observed when I read the report of the first operation that I encountered the placenta in my uterine incision; I had therefore to stitch the placental site. Now I can quite conceive—of course I have no proof of this supposition—that union may not be so firm in such circumstances. The placental site is very spongy from being so vascular. Not only that but the placenta on the second occasion was implanted over the fundus and the old cicatrix, and that doubtless also favoured rupture. Meyer's case was just the same, the placenta was implanted over the old cicatrix. Such cicatrices consist solely of fibrous tissue and one knows what a destructive power the chorionic villi often have.

Undoubtedly what conduces to the healing of wounds and the formation of sound cicatrices in any part of the body, uterus included, is that the wound be aseptic, and that it be carefully stitched. In

my case there was no suspicion of any septic mischief, so that may be dismissed. As regards the stitching the methods of Sänger and Cameron are usually employed. Some have advocated the stitching of the walls in layers, but that is not easily done and has been but seldom practised. Whether the material used for suturing has any influence I cannot say, but certainly silk can be tied much more firmly than catgut. Personally I employ catgut because there is no chance of troublesome sinuses forming if the sutures become infected as is the case with silk. There is yet one other matter which may have an effect on the healing of the uterine wound: the sutures inserted into the uterus are employed not only for the purpose of bringing the edges together, but to control the hæmorrhage, and in consequence are tied very tightly.

But apart altogether from the danger of a fundal cicatrix giving way it must be remembered that any cicatrix is liable to do the same. There is then a distinct danger in not sterilizing the patient and in allowing her to become again pregnant. The question which we obstetricians will have to settle is whether or not this danger is so great that repeated section should be condemned. At the present time, as you know, the tendency is in favour of not sterilizing at the first operation, and this is largely because the results of the first and subsequent operations are now so good. As regards the statistics of first sections Williams states that "in 335 operations performed by Chrobak, Schauta, Leopold, Braun, Olshausen, Zweifel, Reynolds, Bar, Charles, and Chagrin there were only 23 deaths, a gross mortality of 6·8 per cent." My own results are almost identical with these, for I have now had 30 cases with two deaths, a mortality of 6·6 per cent. As regards the results in repeated Cæsarean sections Wallace, whose paper is the most exhaustive on the subject in the English language, from collected cases makes out the mortality lower than the figures mentioned. From cases which have been recorded since the latter's paper appeared it is quite evident that the mortality is lower. Personally, apart from the cases recorded to-night, I have repeated the operation on two patients with satisfactory results for both mothers and children. But let me now briefly refer to the cases of rupture where the anterior incision was employed on the first occasion. So far I have been able to find cases recorded by Targett, Galabin, Horrocks, Koblanck, Guillaume, Woyer and Everke.

Targett's case (*Obstetrical Transactions*, 1900, p. 262). The patient had had a Cæsarean section 2½ years previously for impacted shoulder presentation but she had not been sterilized; she was re-admitted in a state of severe collapse, and on opening the abdomen the child and

the placenta were found free in the peritoneal cavity, and there was a large rupture on the anterior wall of the uterus along the scar of the previous operation. Targett performed abdominal hysterectomy.

Galabin's case, as mentioned by Horrocks (*Obstetrical Transactions*, 1900, p. 243). The patient had been sterilized after Cæsarean section by ligaturing the Fallopian tubes. In spite of this she became pregnant again and the uterus ruptured near full term along the line of incision and the child and a portion of the placenta escaped into the abdomen. Galabin removed the uterus and the specimen is now in Guy's Hospital Museum; the patient recovered. Horrock's case is really that of Targett; he had performed the Cæsarean section referred to in the latter's case.

Koblanck's case ("Uterus Rupture, Stuttgart," 1895). Rupture occurred through old cicatrix; ovum intact in peritoneal cavity; uterus stitched; recovery.

Guillaume's case (*Ref. Central. für Gynäkol.*, 1896, p. 1286). Rupture through Cæsarean section scar, three years old. Uterus had been stitched in layers. Child palpable in abdomen. Uterus felt to left side with line of rupture palpable. Ovum intact in abdominal cavity.

Woyer's case (*Monats. für Geburt. und Gynäkol.*, Bd. 6. Ht. 2, p. 192). In 1893 Cæsarean section by Chroback, wound stitched with silk. At second pregnancy (full time) sudden pain in the abdomen followed by collapse, child easily palpated, laparotomy, twins, both ova intact, hysterectomy, death. Woyer in same paper reports the case of a 2-para, aged 29, on whom Cæsarean section had been performed five years previously by Braun. At the subsequent labour embryotomy was had recourse to. After delivery Woyer introduced his hand into the uterus to feel the cicatrix and found it very much thinned in one part.

Everke's case (*Central. für Gynäkol.*, 1901, p. 722). Rupture through the old Cæsarean section scar which had been stitched with silk. The patient collapsed suddenly and appendicitis was diagnosed. On opening the abdomen the cavity was found filled with blood. The uterus was removed successfully.

A Note on a Rare Case of Acephalic Monster.

By Annie C. Gowdey, M.B. (Lond.),

Assistant Medical Superintendent, St. Pancras Infirmary (South), Pancras Road, N.W.

The clinical history of the specimen is as follows. M.C., aged 21, single, was admitted in labour at 2 p.m., on May 4th, 1904. The membranes had ruptured previous to admission, and according to the patient the liquor amnii had been in excess. On examination the os was partially dilated, the presenting part high and apparently vertex. At 6-40 p.m. she was delivered naturally of a female child weighing 5lbs. 7ozs. The presentation was vertex. The child was asphyxiated at birth, but soon revived. A few minutes later an acephalic female monster, weighing 3lbs. 3ozs. was spontaneously expelled, and with it the placenta, with both cords attached close together towards the edge. There was only one chorion. The accompanying photograph shows the appearance of the monster. It was absolutely devoid of even a rudimentary head, nor could any trace of a cranial bone be felt. At the upper end there was a circular line of hair with a central depression. The forearm was absent in the right upper limb, the hand, which possessed only three digits, being in contact with the lower end of the humerus. The left upper limb consisted of a very short humerus, a forearm, and hand with five digits. Talipes varus was markedly present in both feet. There were five toes on the right foot all webbed; the left foot had only three toes. On the abdominal end of the cord was a semi-transparent cyst about the size of a large orange, through which a portion of the intestine could be seen and felt.

The surviving twin child had a soft, rounded, fluctuating swelling over the right parietal bone. It was covered by scalp, and was non-pulsating. There was no defect felt in the cranial bone beneath, nor did the tumour increase in size when the child cried. At first it was thought to be a caput succedaneum, but it did not diminish during the month the child was under observation.

The mother was a pale, somewhat nervous woman, who stuttered and became flurried when talking to strangers. She had had one child previously, a girl now aged five, who is healthy and in every way normal. The father of this child was not the father in the present case. There was nothing to note in the mother's family history; on the father's side there was a suspicion of tuberculosis.

Remarks. Several cases of acephalic monster have been recorded.[1] Of these three main types have been described. The acephalus monobrachius, in which there is one superior extremity. The paracephalus with no superior extremities, and the mylacephalus, which is a shapeless mass of flesh covered by skin. The present case is unique therefore in the possession of both upper limbs, although these were more or less defective. The omphalosites, of which acephalus is the commonest condition, are found in twin ova along with a normal fœtus. Our case illustrates this. But occasionally anomalies of development occur in the more perfectly formed child. Such are cleft-palate, hare-lip, etc. In this instance there was only the swelling described on the head, which appeared to be nothing more than a cephalhæmatoma. The parasite, as in this case, is usually born last.

In acephalic monsters other deformities may exist besides the imperfect development of the superior extremities. Thus the heart may be absent, or rudimentary. In this case no dissection was made; the fact that the specimen was unique seemed sufficient to justify its preservation intact. Galabin[2] and Lusk[3] associate acephalic monsters with an acardiac condition, and explain the non-development of the head and upper limbs by an imperfect blood supply. Or the lungs and pelvic organs may be abnormal, and hernias are common. The abdominal swelling described in this case was of the nature of a hernia. As regards the sex, curiously enough acephalic monsters, like ours, are nearly all females. According to Ballantyne[4] fœtal malformations are associated with tubercle in the parents; it is interesting to note the suggestion of consumption in the father.

References.

[1] Hirst and Piersol. "Human Monstrosities." Part iii., p. 137, and plates 25, 26, and 27.

[2] Galabin. "A Manual of Midwifery," 6th edition, p. 276.

[3] Lusk. "The Science and Art of Midwifery," p. 558.

[4] Ballantyne. "Antenatal Pathology and Hygiene," Book ii., p. 215.

Case of Puerperal Eclampsia treated by Thyroid Extract dissolved in Saline and given subcutaneously.

By James C. G. Macnab, M.B., F.R.C.S., Edin., and
David S. E. Macnab, L.R.C.P. and S., Edin., etc.

We were called at 8 a.m. on Sunday, 20th December, 1903, to see Mrs. N., primipara, æt. 27, in an eclamptic seizure. She was evidently about eight months pregnant, and had complained the previous week of nothing more than slight swelling of the legs. On the previous day she had partaken heartily of Scotch broth and potatoes, and in the evening had taken one of the usual twopenny baker's pies. She had been restless during the night, and when we saw her she was in her fifth fit. A hypodermic of morphia (gr. ss.) was administered, and hot bottles and blankets were kept round her as far as possible. A little urine was removed by the catheter, and found albuminous, $^1/_6$ by volume. The morphia had a very slight effect in allaying the frequency of the fits, and at 10 a.m. another half grain was administered. At 3 p.m. there was little or no improvement in her condition; as she was taking the fits as frequently as before, and perspiring profusely; so another $\frac{1}{4}$ grain morphia was given. At 6 p.m. croton oil (m. 3) was placed on the tongue, but as that had not acted by 12 o'clock midnight, it was supplemented with calomel grs. v. and Pulv. Scammon Co. grs. xxx. The fits were still continuing, and at 3 a.m. the following day Chloral grs. xl. and Potassium Bromide 3ii were given by the rectum, and half that dose was repeated at 8 a.m. without in any way modifying the frequency of the fits, although to a very slight extent lessening their severity. At 10 a.m. two pints of saline solution having been prepared, 15 Tabloids of Extract of Thyroid (5 grains in each tabloid, B. W. and Co.) were dissolved in the saline, and injected below each breast. Within an hour and a half there was a decided improvement, both in the frequency and severity of the fits, and in another hour the bowels moved and labour began. Under chloroform the labour was terminated with forceps with as little delay as possible, and on the removal of the placenta bleeding was freely encouraged. The child

was dead. The fits numbered 37, so far as could be counted. From this time onward the fits ceased. She remained semi-conscious for 48 hours, when she developed a right basal pneumonia with a crisis seven days later, after which she made a rapid recovery. The urine was examined three weeks afterwards and found to contain only a trace of albumen.

As we have not heard of the thyroid being used in this manner previously, we thought it interesting to report this case.

REVIEW OF CURRENT LITERATURE.

OBSTETRICS.

The Influence of Hysteropexy on Pregnancy.

JACOBS (C.). *Bulletin de la Soc. Belge de Gynécol. et d'Obstet.* Tome xv., No. 2.

IN a discussion upon this subject at the Congress at Rome in 1902 Pinard used the following words: "I take advantage of this interesting communication of our colleague to once again raise my voice against all methods and all procedures which aim at fixing the uterus in women during the child-bearing period of life. I am not going to discuss vaginal or abdominal hysteropexy or any other means of fixation, I content myself with saying that the more the object is attained and the better the result the more is the woman exposed to danger in future pregnancies and confinements." In view of these grave words Jacob has collected and analysed his own cases. Between 1890 and 1897 he performed abdominal hysteropexy seventy times; he then abandoned this operation for vaginal hysteropexy, which he performed 21 times, finally giving this up also to practice suture of the uterus to the pelvic peritoneum by the vaginal route.

1. *Abdominal Hysteropexy.*

The method employed has been to fix the anterior wall of the uterus to the anterior wall of the abdomen by two or three silk sutures passed through the muscles up to the superficial aponeurosis. In these seventy cases twenty-nine pregnancies are reported, twenty-six of the women had borne children previously, three had not. In eighteen cases the labours were normal, one delivery was accomplished by forceps, one by version, there was one case of placenta prævia, and eight miscarriages.

The striking feature is the number of miscarriages; these must to a great extent be caused by the irregular development of the uterus where the fundus has been fixed, particularly when fixed low down. During the first six months of pregnancy it is the fundus which develops most, in the last three months the lower segment; and in cases of ventral fixation it is the posterior wall only which is capable of normal development; this is proved by the facts that when

Cæsarean section has been performed in these cases the incision is on the posterior wall, and when rupture occurs it is this wall which gives way.

2. *Vaginal Hysteropexy.*

The operative procedure has been to fix the upper part of the anterior wall or even the fundus of the uterus to the vaginal wall by means of two or three silk sutures. In the twenty-one cases operated upon pregnancy followed eight times; there were two miscarriages, one case of placenta prævia and five normal labours.

The result of this operation is to bring about an exaggerated degree of anteflexion. This gave rise to difficulty in one case, the cervix was prevented from rising, and having caught behind the bulging anterior wall of the vagina could be reached only with the greatest difficulty. In this series there is again noticed the great liability to miscarriage.

3. *Suture of Uterus to the Pelvic Peritoneum.*

"The operative procedure consists in opening the anterior pouch of peritoneum after a transverse section through the anterior vaginal fornix; isolating a strip of the peritoneum which covers the bladder, fixing the anterior wall of the uterus towards its upper third to this strip by means of two buried sutures, closing the breach in the peritoneum, and finally suturing the vaginal wall." The great advantage of this procedure is that by suturing serous membrane to serous membrane adhesions are formed which allow of great mobility and do not prevent the physiological development of the uterus during pregnancy.

This operation Jacob has performed sixty-nine times; pregnancy has followed twenty-one times, and in each instance has advanced to full term; there was no case of dystocia.

"If we compare these results with those of other operations for correcting uterine deviations we can only deduce that vaginal hysteropexy, as we practice it to-day, is an operation devoid of any injurious consequences during pregnancy. That vaginal fixation and abdominal hysteropexy, on the contrary, are operations which should never be performed upon a woman during the child-bearing period of life."

HERBERT WILLIAMSON.

On Venous Dilatations in the Gravid Uterus and their Clinical Importance.

HALBAN. *Monats. für Geburts. und Gynäkol.* Bd. xx., Ht. 3.

GREAT dilatation of the blood vessels of the gravid uterus is so seldom reported that only one case, that of Kaufmann, can be found in the literature of the subject. The following case in which it led to serious bleeding and a high degree of softening of the uterine wall is of great interest. The patient, aged 26, who had had no previous pregnancy, menstruated last on May 3rd, 1903. At the beginning of June, instead of a menstrual period she had for eight days a slightly blood-stained discharge, which afterwards became purulent. At the same time she had pains in the back and breasts, and had some rise of temperature. Later she had severe hæmorrhages and was admitted to hospital on the 26th of July. On examination she appeared to be three months pregnant, and as the bleeding soon ceased with rest in bed, she went out, only to be re-admitted later with severe hæmorrhage. It was then decided to empty the uterus. For this purpose the cervix was dilated under anæsthesia with Hegar's dilators, and the embryo and appendages were removed with ovum forceps. During this operation it was noted that a piece of uterine wall was brought away with the forceps. On careful examination a perforation of the uterus was found three finger's breadth above the internal os uteri. Accordingly the uterus was removed, with ease, per vaginam, and it was found that there were three serious lacerations, two in the cervix and the perforation above mentioned. Recovery was uneventful. On cutting open the uterus along the anterior wall, the musculature presented a remarkable appearance. It looked like a sponge on account of great dilatation of thin-walled vessels, varying in size from a pin's head to that of a lentil, with the muscle wall as thin as paper between them. These vessels were evidently veins and capillaries greatly dilated, whose walls almost touched one another on account of the great thinning out of the muscle substance between. The outer and inner groups of vessels seemed to be most affected. Kaufmann described two somewhat similar cases, one in a 30-year-old primipara, and the other in a widow of 41, in whom there was no evidence of pregnancy. Klob and Falk each described one case of partial telangiectatic degeneration of the non-pregnant uterus, but with these exceptions no other cases can be found. Three possible explanations seem to offer themselves for those cases, one a naevoid formation in a non-pregnant uterus, in the same way that angeioma

occurs in the liver, to which catagory Klob's and Falk's cases belong. Secondly, venous dilatations of the non-pregnant uterus from back pressure, as the second case of Kaufmann appeared to be. Thirdly, varicosities in the pregnant uterus from hypertrophy of the veins, as in Kaufmann's first case and the present case. The first-named no doubt occurs, but the second seems doubtful, as the pelvic veins are not generally affected in diseases such as cirrhosis of the liver, in which there is much back pressure. The mere pressure of a pregnant uterus can hardly be considered to be a sufficient cause of back pressure in the veins, especially as in Kaufmann's case only certain of the veins were affected. It would appear accordingly to the author that a specific change in the vessels due to pregnancy is the cause of this curious condition, and that varicosities result from thinning of the vessel walls instead of hypertrophy such usually occurs. The varicose veins of the vulva, legs and abdomen, so often seen in pregnancy, may be caused in this way too, for they cannot wholly be explained on a pressure hypothesis. The serious side to the question is the great liability to hæmorrhage which occurs, and also the great danger of laceration if any operative procedure has to be undertaken, both of which dangers are exemplified in the present case.

THOS. G. STEVENS.

Icterus and Pregnancy: Clinical Observations.

BERGESIO. *Giornale di Ginec. e Pediat.*, 1904. No. 8.

IN this paper two cases are reported. The first is that of a primipara who was attacked by severe icterus at the end of the fifth month of her pregnancy, and who died at the end of the ninth month with severe eclamptic convulsions; the other case was that of a woman who, in two successive pregnancies, developed intense icterus, in the first instance, at the fourth month, and next time at the fifth month. On both occasions premature labours occurred. In this patient Bergesio noted a diminution in the area of liver dullness, and found great functional derangement of the organ as evidenced by examination of the urine and fæces. Referring to Valdagni's work pointing out the occurrence of two forms of icterus in pregnancy, namely the simple catarrhal form, and the very grave form, the author raises the question as to whether this latter form is not really an acute yellow atrophy of the liver, so far as the alteration undergone by the organ is concerned. He considers that acute yellow atrophy and the grave icterus of pregnancy should be regarded as types of the same disease,

the only difference being the cause of their production. He further maintains that in view of the extreme rarity of the severe form of icterus, it is most unlikely that it is dependent exclusively upon pregnancy, and that the various toxins which produce such a grave condition of toxæmia are not the sole and special products of the pregnant state. The author, however, is at a loss to explain the reproduction of icterus in successive pregnancies, and the re-appearance of severe hepatic symptoms by the mere occurrence of pregnancy in a woman who, when not in this condition, had perfect regularity in the functions of her liver.

OLIPHANT NICHOLSON.

The Microscopical Diagnosis of Abortion.

HITSCHMANN (F.). *Zentral. für Gynäkol.*, 1904. No. 32.

OPITZ has stated that in the first eight weeks pregnancy gives rise to certain gland changes in the endometrium by which the presence of gestation may be ascertained for certain.

Seitz advances two cases to show that the gland changes above referred to can occur apart from pregnancy, so that their presence, from a medico-legal point of view, appears to be of doubtful value. The question to settle is whether Seitz's observations can be confirmed.

The author publishes two cases which throw light on the question. In both the entire uterus was examined. He found:—

1. "Pregnancy glands" in luxuriance without pregnancy..
2. An intact small ovum—without "pregnancy glands."

The first case was one of an elderly patient whose uterus was removed for repeated attacks of menorrhagia; the hysterectomy was performed one day before an expected period. The uterus and left adnexa were removed. Several years had elapsed since the last pregnancy; there had been no cessation of menstruation. The uterus was bulky with redundant folds of mucous membrane looking so closely like decidua that the whole endometrium was examined, and sections were also cut of the tubes. The mucosa was thickest at the fundus. The ovary showed no fresh corpus luteum. Microscopically the mucous membrane showed hyperæmia of the vessels, œdema of the stroma, small hæmorrhages around distended capillaries and just under the surface epithelium were many hæmatomata. There were two layers distinguishable in the endometrium—a compact surface layer and a deep spongy portion. The compact

surface layer is covered with cubical epithelium beneath which are cells of a decidua-like character. The latter form compact processes; they have large nuclei which stain only faintly—the outline of the cells is not clear. This appearance of cell changes is in the depths of glandular layer; the inter-glandular tissue is here quite unchanged. All the glands are enlarged and convoluted. Papillæ are seen to sprout into the lumen, and these are in places set so close together that the lumen is almost blocked. The epithelium in the glands is arranged in many layers—far greater in numbers than usual. Such are the glands that Opitz described as "pregnancy glands," but in this case the presence of pregnancy was completely excluded.

Case 2. The uterus was obtained by *post-mortem* examination from a young women who died of meningitis. The ovum was perfectly uninjured and intact. .The mucous membrane was divisible into a compact and spongy layer. The columnar epithelium was of the "low" type, but the glands were not altered in shape; there were none of the papillary and shelf-like projections into the lumen, nor was the latter obstructed as in Case 1., in fact there was no sign of the change characteristic of pregnancy spoken of by Opitz in his three cases.

In spite of the above, the writer acknowledges the service rendered by Opitz in pointing to a connection between the papillary form of gland change and the presence of gestation, a service which he regards as not being minimised, in that for diagnostic purposes it has its limitations. The change noted by Opitz consists in the formation of epithelial tufts and plumes; these project into the lumen and rest upon shelves and brackets of fine connective tissue. The shape of the individual epithelial cells differs; the nucleus is basal, it stains but feebly, the cells are indefinitely outlined, the tufts appear to blend with others across the lumen of the glands. Hitschmann attaches, too, some importance to the "low" character of the covering pallisade epithelium as a sign of pregnancy.

The writer regards the above changes as not only indicating the embedding of an ovum, but as due to the pre-menstrual changes in the uterine mucosa. With regard to the presence of decidua-like cells, he says that they are met with in endometritis, also in cases of phosphorus poisoning, and he points to the well recognised error of laying stress on the decidual character of *individual cells* apart from the decidua-like feature of cell masses.

Cuthbert Lockyer.

Incarceration of Cystic Ovaries in a Case of Hydatidiform Mole.

BAMBERG. *Monats. für Geburts. und Gynäkol.* Bd. xx., Heft 3.

THIS case, which is of great interest in the light of modern opinions concerning the influence of the corpus luteum on the progress of pregnancy, adds a further weight of evidence in support of these views. The patient, 21 years old, became pregnant after being married four months. Bleeding commenced when eight weeks pregnant, and continued for a week. At three months the patient began to have great pain in the abdomen, vomiting and great difficulty in passing urine. For these troubles she was admitted to hospital, and it was found that she had a swelling, the pregnant uterus, reaching to the navel, and to either side of it a tumour low down in the pelvis. These tumours felt cystic, and could with great difficulty be diagnosed as separate from the uterus. They were considered to be cystic ovaries. Laparotomy was performed, and it was found that both ovaries were cystic and firmly adherent in the pelvis. Both were considerably torn during removal, and as a portion of the left appeared to be healthy, it, along with the left tube, was left behind. During the evening of the operation a fœtus 10cm. long was expelled and an hour later the chorion, in a condition of hydatidiform degeneration was also expelled. The patient made a good recovery. On examination of the removed ovaries, the right, in which was a considerable sized cyst besides many small ones, contained in addition a normal corpus luteum of pregnancy measuring $2{\cdot}5 \times 1 \times 1$cm. The small cysts, of which there were several visible to the naked eye in both ovaries, had very thick walls with thick yellowish-brown contents. The walls of these cysts were found on microscopic examination to consist of four definite layers. The most external was thick, and consisted of a sparsely nucleated firm fibrous tissue, the tunica albuginea. Next came a layer which was of loose connective tissue containing many nuclei and blood-vessels. This must be called theca externa, and is derived from the ovarian parenchyma. It contained no ova nor Graäfian follicles which could be recognised as such. The next layer, which must be called theca interna, was of the nature of a cavernous tissue, containing many blood-vessels largely disposed in a circular manner around the cyst, and lying in connective tissue with concentric parallel bundles of fibrous tissue. The innermost layer which was sharply defined, was of an epithelial nature. It consisted of an irregular layer, sometimes one often as many as six cells thick, arranged in a " ruff-like " manner, forming thus projections into the

lumen of the cyst. These cells had pigmented protoplasm and deeply stained nuclei. Between these cells delicate fibrous processes containing capillary vessels could be seen here and there. When this layer was only one cell thick the cells were considerably flattened, evidently by means of the pressure of the cyst contents. This epithelial layer constituted a typical lutein cell layer, and made it clear that these small cysts must be regarded as lutein cysts. There were no lutein cells formed outside this layer, no such cells being found distributed through the ovarian parenchyma. Inside the lutein cell layer a fifth layer was occasionally visible, especially at those places where the lutein cells were least developed, or most flattened. This layer consisted of flattened cells lying parallel with the undulating outline of the lutein cell layer above described. The corpus luteum showed no pathological changes. Thus it will be seen that this case presents the same anatomical features as the cases recorded by Stöckel, Kreutzmann, Pick, Runge and others, namely, the co-existence of a hydatidiform mole with over-production of lutein cells in the ovaries. But whereas in many of the recorded cases the lutein cells have been found indiscriminately distributed throughout the ovaries, in this case the lutein cells formed the innermost lining of numerous small cysts. There is some difficulty in explaining this difference. It would appear that the present case has features which make it almost certain that it is an early stage of the condition above mentioned by other writers. The fact that the fœtus, 10cm. long, was well developed and showed no change save that of general œdema, seems to point to the hydatidiform degeneration, having started later than is usually the case. Also the vesicles of the mole were on the whole small, and again this points to the late onset of the degeneration. The small cysts in the ovaries help in this belief too, because the pressure inside the cysts had not yet been sufficient to smooth out the lutein cell processes or to break the lutein cell layer. Later, if the ovaries by their incarceration had not called for immediate treatment it is possible that the pressure from within the cysts would have broken the lutein cell layer and in this way some of the lutein cells would have become distributed in the ovarian stroma. For these reasons the author believes that this case represents an early stage of the same condition which has been differently described by other authors, and also that the case upholds Frankel's hypothesis, that over production of lutein cells in the ovary causes an excessive growth of chorion epithelium, and that myxomatous degeneration of the villi follows this overgrowth.

THOS. G. STEVENS.

Hydatid Mole and Eclampsia.

RAINERI. *Gazzetta degli ospedali e delle cliniche*, 1904. No. 58.

IN this clinical note the author refers to the relations which exist between the ovum and the maternal organism, and to certain symptoms that may on this account appear during pregnancy. The patient was a very anæmic woman in her eighth pregnancy. At the end of the third month, while at her home, labour pains came on and a hydatid mole was expelled. Everything appeared to go on satisfactorily till the 9th day of the puerperium, when several severe eclamptic seizures occurred. The patient was removed to a maternity hospital in profound coma, and died in a few hours. At the necropsy a little mass of dark-red tissue was found adherent to the fundus of the uterus, and in it were present a number of characteristic cysts of various sizes. Examination of the blood and urine afforded some evidences of anæmia and of hepato-renal insufficiency. The changes found in these organs and in the blood in this case would, in the author's opinion, tend to support the fœtal origin of the severe maternal intoxication.

OLIPHANT NICHOLSON.

The Treatment of Eclampsia by Thyroid Extract.

BALDOWSKY (W. G.). *Vratch*, Vol. xi., 1904.

THE author has confirmed the value of thyroid extract in two cases. In the first case, fits came on in a multipara at the 7th month of pregnancy, and 18 grains of thyroid extract were given. The fits ceased. The thyroid was continued for two days longer—10 grains daily—and the patient seemed quite recovered. A fortnight later, however, she again developed severe eclamptic fits, sixteen seizures altogether, which were treated by thyroid extract with narcotic remedies in addition, and recovery followed.

The other case was that of a primipara at term who was suddenly seized with eclamptic convulsions at the commencement of labour. Thyroid alone was given and the attacks ceased before the rupture of the membranes. The labour took place without any unusual symptom, and the puerperium was normal.

OLIPHANT NICHOLSON.

Gyn. Staff Room University Hospital.

Urinary Elimination in the Course of Uncontrollable Vomiting of Pregnancy.

Schwab (M. A.). *Presse Médicale*, October 5th, 1904.

The author regards an auto-intoxication, which may arise from various sources, as the most probable cause of the persistent and grave form of vomiting sometimes met with during pregnancy. Important new work has been carried out by Mettey, who has studied the urinary elimination in the course of these cases. In this way one can discover the manner in which the processes of metabolism are going on, and can also obtain important information as to the functional activity of the liver and kidneys.

In the course of such cases the quantity of urine is often diminished, and when the condition improves there is an increase. Roger and Jeanselme have noted an increased toxicity of the urine coincident with an alimentary glycosuria, indicating hepatic derangement. The urea elimination is diminshed, while the output of uric acid is increased. Bonnaire likewise showed that the chlorides were diminished. The dimunition in both urea and chlorides becomes more marked the more the patient emaciates. From the observation of six cases the following results are given:—

1. The diminution of the chlorides was constant.

2. The diminution of the phosphates was also constant, but was within narrower limits.

3. The quantity of urea was normal in two cases, and decidedly diminished in the other four cases.

4. The quantity of uric acid exceeded the normal output in three cases; it was normal in two cases, and less in one case. The relative proportion of uric acid to urea rose considerably in four cases, and fell in another case; the relative proportion of phosphoric acid to urea was normal in three cases, and increased in the other three.

5. Indican was present in four cases, and often one could find traces of urobilin or acetone.

Oliphant Nicholson.

On Rapid Dilatation of the Cervix by Bossi's Method.

Erlich. *Archiv für Gynäkol.*, 1904. Bd. lxxiii., Ht. 3.

This is an elaborate study from Leopold's clinic, doubtless designed in support of his earlier utterances on the subject. Erlich's present paper occupies 100 pages of the *Archiv*, 40 of these being devoted to

the literature of the subject. The writer records 30 new cases in which rapid dilatation has been performed, and whose details possess no special interest for the reader.

He next undertakes an analysis based upon these 30 cases taken together with 17 previously recorded. Amongst the indications for the use of the method, eclampsia was the chief. The writer appears to regard a mortality of six out of nineteen cases as a satisfactory result. Fever during labour, a manifestation of infection, was the indication in five cases, in two there was rigidity of the cervix, and in two there was advanced phthisis. In six cases natural dilatation was delayed owing to pelvic contraction. In two cases the child's life was threatened by compression of the cord.

The writer next discusses occasions for the use of the dilator which have not occurred in his own experience, namely placenta prævia, accidental hæmorrhage, induction of premature labour, and prolapse of the cord. The writer considers that rapid mechanical dilatation should be employed only when the life either of the mother or the child is seriously threatened. The earlier the stage of pregnancy the greater is the care and foresight necessary. Extra precautions are also necessary in primiparæ, and in cases in which the cervix is not taken up. The manipulation of mechanical dilators is discussed at length, also operations for delivery after dilatation, and the prognosis for mother and child. The concluding section deals with the causation, nature and treatment of the injuries which occur during mechanical dilatation and the subsequent delivery of the child. The bibliography contains references to 70 original papers, and completes a communication which is probably the most serious published on the subject up to the present time.

W. E. Fothergill.

Premature Labour in Contracted Pelvis induced by means of Bossi's Dilator.

Heller. *Archiv für Gynäkol.*, 1904. Bd. lxxiii., Ht. 3.

The majority of writers do not approve of mechanical dilatation as a method of inducing labour, though they admit that dilators of the Bossi type may well be used in accelerating labour after it has been induced by other means. Heller writes that the bougies of Krause are slow, are liable to injure the placenta and easily allow infection owing to the slowness of their action. He therefore prefers the introduction of an elastic bag. The main difficulty in using a bag lies in its introduction through the cervix. This difficulty can be overcome

by first dilating the cervix with Bossi's dilator. In about 15 minutes dilatation of 4 or 5 cm. can be secured and the bag can then be introduced with ease. The writer has used this method in 30 cases in which the conjugate measured from 7½ to 8½ cm. Spontaneous delivery followed in six cases. The writer used the instrument of De Seigneux in seven cases, and confirms the inventor's claim for numerous advantages over instruments of the Bossi type. In the cases dilated with this instrument there was no injury to the cervix. In some of the other cases, especially those presenting old lacerations of the cervix, varying degrees of tearing were observed. The bag was expelled in one case 2 hours 40 minutes after its introduction. In another, dilatation was only completed after 23 hours. The average duration of dilatation by the bag was 9 hours. The shortest period occupied by the whole labour, including the third stage, was 4 hours; the longest 25 hours 35 minutes. The shortest spontaneous labour was 8 hours; the average was 15 hours. The average duration of induced labour in the whole of the cases was 11 hours 30 minutes. In 18 cases the puerperium was normal, no patient remained in hospital more than 16 days. The writer considers that the short duration of induced labour secured by this method greatly improves the prognosis for mother and child (Buschlieck's estimated average for induced labour was 79 hours, Schödel's was 41 hours).

In Heller's 30 cases 25 children were born alive; 3 died in the first 9 days. The causes of death are carefully detailed by the writer. The obvious fault of this paper is that the writer compares his method with one practically obsolete. He should have compared his results with those secured by elastic bags introduced after preliminary dilatation with Hegar's dilators.

W. E. Fothergill.

Hebotomy.

Velde (H. Van de). *Zentral. für Gynäkol.*, 1904. No. 30.

Since his former communication on this subject the writer states that the first patient upon whom he performed this operation has again become pregnant. The pregnancy was normal, objectively nothing remained but the external scar to indicate the previous operation. The callus had disappeared, the posterior surface of the pubic bone was quite smooth. At full term the author ruptured the membranes after full dilatation of the os, then placing the patient in Walcher's position, delivered the child by version without much difficulty. The child, though fully developed, was not so large as the one

previously delivered after hebotomy. Details are then given of the third and fourth cases in his series. The third relates to an undersized 1-para, aged 30 years. At full term the child lay in a vertex position. The pelvis was rachitic and generally contracted. The pelvic circumference measured 75 c.m.=30·3 inches, the distance between either anterior superior spine and the symphysis was 17 cm.=6·8 inches, and the diagonal conjugate measured 9·5 cm.= 3·8 inches. The writer first saw the patient after she had been in labour for twenty-four hours; the membranes had been ruptured for some hours; the os was fully dilated. The head lay with the occiput posteriorly impacted in the pelvic inlet. The pains were strong. As after three hours of strong labour no progress was made and rupture of the uterus was feared, hebotomy was performed under anæsthesia. The incision was made as usual on the left side according to the technique fully given in the *Central. für Gynäkol.*, 1902, No. 37.

On division of the bone the sawn surface gaped 3–4 cm. apart. It was then easy to deliver the head through the inlet with Hofmeier's forceps, then the pelvis was compressed by side to side pressure. The occiput was rotated by the left blade of the forceps and made to present on the right side away from the wound.

The resistance of the pelvic muscles and of the narrow vulvo-vaginal outlet was considerable and was only partially overcome by an oblique incision running from before back on the right side. Nevertheless there was no tearing of the soft parts as the result of operation.

The child was asphyxiated but breathing was easily restored. The biparietal diameter measured 10·5 c.m.=4·2 inches, the bitemporal diameter measured 9 cm. After delivery the pelvic bones were not brought together completely but a diastasis one finger's breadth in width was left. Influenza-bronchitis disturbed the convalescence. On leaving hospital three weeks after operation the patient had no pain. There was a mass of callus uniting the sawn surface; the pelvis was now asymmetrical, the distance between the spines and symphysis measured 17 cm. on the right, 19 cm. on the left. A radiograph taken four months later showed a displacement of the symphysis. The left obturator foramen was 1·5 c.m. further from the symphysis than was the right; the left half of the pelvis was therefore widened, especially in its oblique diameter. Later on this asymmetry disappeared and at the time of writing the patient was again about 4½ months pregnant.

Fourth case. This was a case of twins. The pelvis was rickety; diagonal conjugate 9·25 cm.=3·7 inches; the intercristal measurement 23·5 cm.; measurement from spines to symphysis, 14 cm. Hebotomy

by Gigli's saw was carried out under chloroform, this rendered delivery of both full-term children easy. Subsequent uterine hæmorrhage after Crede's expulsion of the placenta necessitated plugging. The hebotomy wound was closed by silk, which was removed on the 5th day; union *per primam*. A drainage tube was used for a few hours only. The patient was placed between sand bags. On the 10th day the patient was allowed to move her legs, this she did without pain. On the twelfth day she discharged herself but no harm resulted. After operation the left ileo-pubic measurement was found to be 15·5 cm., *i.e.*, an increase of 1·5 cm.

The writer claims that a *permanent* widening of the pelvis is attained by hebotomy, and draws attention to the fact that fixation bandages can be done without.

CUTHBERT LOCKYER.

Tuberculosis of the Gravid and Puerperal Uterus.

KRAUS (EMIL). *Zeits. für Geburts. und Gynäkol.*, 1904. Bd. lii., Ht. 3.

TUBERCULOUS changes in the pregnant or puerperal uterus have not been described hitherto, except when part of a general miliary tuberculosis. Kraus gives a full description of tuberculous changes in two uteri, one pregnant the other puerperal. The former was taken from a woman of 23 who died of phthisis when about four months pregnant. On the inner surface of the uterus were numerous small projections which raised up the membranes. On stripping off the latter these projections appeared as yellow or reddish nodules, 1–2 m.m. in height, occupying the whole depth of the endometrium. In the neighbourhood of the internal ostia of the tubes this nodular appearance was absent; lamellar, caseous, yellowish-white masses being seen under the membranes. The fœtal surface of the placenta presented nothing abnormal. The tubes contained caseous masses.

Microscopically three distinct areas could be recognised in the decidua:—

1. In the neighbourhood of the tubal ostia there were typical tuberculous changes, caseation, giant cells and tubercle bacilli being seen. Both spongy and compact layers had almost entirely disappeared, their places being taken by products of tuberculous inflammation.

2. In other places the decidua vera showed peculiar changes which could not be considered typical of tubercle. Nodules were found lying

between the muscle and the membranes made up of laminated thrombi containing numerous round cells. In these places the decidua had disappeared except for a few remains of the spongy layer.

3. In some parts of the edge of the decidua serotina the two above-mentioned changes were found in less marked degree.

In the placenta no pathological changes or tubercle bacilli could be found. The cervix was normal. There were no tuberculous changes in the fœtus. The mucous membrane of both tubes showed tuberculous changes.

The second uterus was taken from a patient of 31 who died of acute miliary tuberculosis three weeks after a five-months' abortion. In the endometrium and vaginal mucous membrane were small greyish-white nodules, which proved microscopically to be caseous tubercles.

HENRY RUSSELL ANDREWS.

On Changes in the Nose and Pharyngeal Space in Pregnant, Parturient, and Lying-in Women.

FREUND (H. W.). *Monats. für Geburts. und Gynäkol.* Bd. xx., Ht. 3.

THE recent work on the co-existence of nasal lesions and dysmenorrhœa, and the cure of the latter by treatment of the former, led the author to investigate the condition of the nose and throat in a large number of pregnant women at different periods. The cases are reported seriatim, and the lesions found carefully considered, and as a result the following conclusions have been arrived at:—

1. There are physiological relations between the female sexual organs and the nose.

2. These relations made themselves clear in pregnant women, for out of 100 women examined 66 had hyperæmia of the pharyngeal mucous membrane and hypertrophy of the turbinated bones, especially the lower, more seldom the middle.

3. The pregnancy changes in the nose are not periodical as has been suggested, but are continuous, and clinically show themselves by epistaxis in 25 per cent. of the cases.

4. These changes are induced especially by the circulatory apparatus.

5. During the labour pains, there is a considerable swelling of the turbinated bones, a physiological phenomenon started reflexly by the respiratory organs.

6. The nasal pregnancy-disturbances often remain during the puerperium, and suckling has no influence on them.

7. In certain women reflex hyperemesis gravidarum can be started from the swelling of the turbinated bones and septum, and treatment of them by the galvano-cautery cures the vomiting.

8. More seldom the pharynx shows hyperæmia and hypertrophy of the mucous membrane and tonsils during pregnancy.

THOS. G. STEVENS.

Lac Vinum Infantum: A Review of the Work of Infant Milk Depôts.

FORTESCUE-BRICKDALE (J. M.). *Bristol Medico-Chirurgical Journal*, September, 1904.

INFANT death-rate and the means to be taken for its diminution, is a subject which is at present receiving much consideration in other quarters than that of the medical profession. In connection with the matter the following premises may be stated:—(1) The mortality of children under one year is very high, and has not decreased proportionately to the general mortality. (2) It is highest during the first three months of life. (3) It is much higher in artificially-fed children than among those fed on breast-milk alone. (4) Breast-feeding is becoming less frequent. (5) The birth-rate shows a marked and steady decrease.

The obvious remedies for this condition of things are to encourage breast-feeding, and to improve the conditions under which artificially-fed children are reared. Infant day nurseries provide a much-needed assistance to mothers who can neither feed nor take care of their infants, but they are too costly. There is another method of dealing with the care and feeding of the infants of the poorer classes, namely the establishment of milk depôts, or as they are fancifully called "gouttes de lait." These are institutions, under the control of the Medical Officer of Health, for the supply of milk, modified to suit the needs of infants, to the poorer classes at a small charge, in cases where the mother is unable to suckle her infant. The milk is modified and "sterilised" and sold in stoppered bottles, each bottle containing enough for one feed, according to the age of the child. Enough bottles for 24 hours are sold together, and a rubber teat is provided. Full verbal and printed instructions are given to the mothers, and a staff of lady-inspectors visits at the various homes to see that the feeding is properly carried out.

The milk is sold at a very cheap rate. For children under the age of six months only 1s. 6d. per week is charged, and for children over a year 2s. 6d. per week.

As regards the results of these undertakings, as far as they can be estimated, and apart from statistical evidence, there is a very general opinion among medical men and others who have experience in the districts where milk depôts exist, that the results are, on the whole, excellent.

Certain general objections have been raised to the establishment of milk depôts in England. These may be divided into (1) socio-political and (2) medical. (1) It has been urged that it is outside the functions of a municipality to distribute "sterilised" and modified milk, and also that the system tends to "pauperise" the people. (2) The medical objections are three in number. It is said that milk depôts tend to discourage breast-feeding; that they are worked by the municipal authorities, and are not under the direct supervision of a qualified medical man; and that the use of "sterilised" milk tends to the production of infantile scurvy.

In summing up the author mentions a few points which he thinks are of practical importance in the working of a milk depôt. (1) The co-operation of the medical profession and local hospital authorities is absolutely essential to the success of the undertaking. (2) Efficient house inspection is hardly less important. (3) Sales through local dairy shops should be avoided where possible. (4) It is probably better to dilute and heat the milk, but the terms "humanised" and "sterilised" should be dropped as they are inaccurate and misleading. (5) The sources of the milk, if not owned by the municipality, should be under the strictest regulations.

OLIPHANT NICHOLSON.

GYNÆCOLOGY.

The Question of Tubal Menstruation.

THORN (W.). *Zentral. für Gynäkol.*, 1904. No. 32.

IN the *Encyclopædia of Obstetrics and Gynæcology* tubal menstruation is denied by Strassman, considered as proved by v. Herff, and regarded as doubtful by Schönheimer. Winckel, Leopold and Wendeler have shown that the tubes become congested during menstruation, slight hæmorrhages into the tubal tissues under the mucosa with elevation and separation of the lining epithelium occur

at this time, probably a small amount of secretion takes place, but an escape of blood similar to that from the uterine mucosa never occurs from healthy tube during menstruation.

Chapin Minaret noticed blood escaping from the ostia interna in a case of inverted uterus, whilst the latter itself showed no sign of menstruation; he regarded this as tubal menstruation. The writer observed a recent case of inversion where the entire mucosa bled during menstruation and apparently bleeding occurred from the mouths of the tubes, but he guards his observation by the remark that it was very difficult in the inverted state to distinguish between true uterine mucous membrane and that of the interstitial portions of the tubes. Hitherto no proof exists that the healthy tube menstruates in a sense analogous to what takes place in the uterus. But the question arises whether the normal congestion of the tubes, which has been shown to accompany menstruation, cannot, under pathological influences, be exaggerated to such a degree as to give rise to tubal bleeding simulating the menstrual flow. A positive answer may be unconditionally given to this question as cases of gynatresia, tubo-abdominal and tubo-vaginal fistulæ prove. Vicarious menstruation occurs only from a diseased mucous membrane, whether that membrane belongs to the tube or the nose. With regard to acquired hæmatosalpinx it cannot be proved that the hæmorrhage occurs in the cyclical fashion characteristic of menstruation.

Hofmeier was the first to prove that from a diseased tube bleeding resembling typical menstruation can occur. In his case, after an operation for extra-uterine gestation, the sac had been sewn to the abdominal wound, and from the mouth of the tube fixed in the angle of the wound there occurred periodic hæmorrhage synchronous with the menses. Thompson records a case where a tubo-abdominal fistula resulting from the opening of an abscess, bled regularly every month.

Haeckel's case was one in which a tubo-abdominal fistula resulted from a puerperal abscess and this bled at each menstrual epoch. Von Herff mentions a similar case. Wendeler records a tubo-vaginal fistula resulting from vaginal hysterectomy from which there issued monthly losses of blood which ceased when the rudiment of the tube became gravid. The writer concludes by adding two cases of his own to this list.

1. A single woman, aged 37 years (three years after a myoma had been enucleated from the anterior uterine wall), was found to have a suppurating abdominal fistula. Eleven months after the operation it commenced to bleed after each epoch and continued to bleed regularly with menstruation for twenty-five months. A large

calculus was found in the bladder due to a wandering stitch, and the adherent tube was removed during the operation of cystotomy.

2. A 2-para, aged 43 years. Vaginal myomectomy was performed for fibroid tumour; the left adnexa were removed, but owing to high fixation the right appendages were left, the stump being sewn into the angle of the vaginal wound. For six months afterwards regular monthly hæmorrhages occurred from the open mouth of the tube, this was only once excessive, but being a worry to the patient the mucosa was scraped on two occasions, finally it ceased, owing, the writer thinks, to atrophy of the ovary.

CUTHBERT LOCKYER.

Are Internal and External Wandering of the Ovum Possible?

BURCHARD. *Zeits. für Geburts. und Gynäkol.*, 1904. Bd. lii., Ht. 3.

THAT external wandering of the ovum may occur there can be no doubt. It has been conclusively proved by experiments on animals, pregnancy having occurred after the tube of one side and the ovary of the other had been removed. The same thing has been seen in the human female. Evidence of the occurrence of internal wandering, *i.e.*, passage of an ovum out of one tube across the uterine cavity into the other tube, is scanty and not convincing. The ciliary current and the peristaltic movements of the tube would both tend to render internal wandering impossible. Burchard is of opinion that peristalsis of the tube has more to do with the passage of the ovum from the peritoneal cavity to the uterus than is generally supposed. He considers that the power of the cilia in the tube has been exaggerated. In some animals cilia are found only in the ampullary part of the tube. In these animals peristalsis must be largely responsible for the movement of the ova. The internal opening of the Fallopian tube is funnel shaped, with the small end of the funnel opening into the uterus. Fluids very seldom pass into it from the uterus, and it would be difficult for an already enlarged ovum to pass through this narrow opening, and even if it did get into the tube from the uterus the ciliary current would tend to sweep it back again. In vertebrate animals reversed action of cilia and spontaneous cessation of ciliary movement do not occur although they are seen in lower animals. Little is known about peristalsis in the tube, but reasoning by analogy from what is known of peristalsis in the intestine it is at least unlikely that antiperistalsis occurs there.

Burchard concludes that internal wandering of the ovum is absolutely impossible. HENRY RUSSELL ANDREWS.

On the Simultaneous Occurence of Sarcoma and Carcinoma in the Uterus.

NEBESKY. *Archiv für Gynäkol.*, 1904. Bd. lxxiii., Ht. 3.

THE writer describes and figures a uterus in which cancer of the body is accompanied by widespread sarcomatous degeneration of the muscular wall of the uterus. Opitz and Fränkel have recorded similar appearances. The writer surmises that the presence of sarcomatous tissue in the uterine wall exerts a deleterious influence on the epithelium lining the cavity. He thought it worth while to examine ten cases of sarcoma uteri with reference to this point, and was rewarded by finding a second example in which the two conditions were present. He regards the finding of carcinoma twice in ten cases of sarcoma as an indication that the simultaneous existence of the two forms of new growth is not so uncommon as has been supposed.

W. E. FOTHERGILL.

Spinal Analgesia, with special reference to its use in Gynæcology and Obstetrics.

STOLZ. *Archiv für Gynäkol.*, 1904. Bd. lxxiii., Ht. 3.

THIS writer has used spinal analgesia by tropacocain in 155 gynæcological and 25 obstetric cases. He gives a complete review of the literature of the subject, with 155 references to the work of other authors. In technique Stolz differs somewhat from earlier experimentors. He uses a small trocar and canula, drawing off through the latter into a small glass vessel, about 5 c.m. of cerebro-spinal fluid. In this he dissolves 0·05 grammes of tropacocain, and then by means of a syringe returns the fluid through the canula. Anæsthesia reaches the level of the umbilicus in 8—15 minutes. The visceral peritoneum remains sensitive longer than other structures.

Out of 155 cases, cerebro-spinal fluid was used 136 times, water and saline solution being employed in the remainder. Out of the 136 cases 100 were successful; in 29 inhalation of anæsthetics had to be employed to prolong analgesia, and in seven inhalation had to be employed before the operation could be commenced. The complete failures were in cases of abdominal section, as were 17 of the partial failures. The writer considers that spinal analgesia with 0·05 to 0·08 gr. of tropacocain dissolved in cerebro-spinal fluid is safe, and is not followed by disagreeable after effects. The anal and genital regions are anæsthetised first and remain insensitive longest (1—1½

hours). The larger the dose the longer and more complete the analgesia. The larger the quantity of fluid used the more widespread is the analgesia. The method is most useful in plastic operations.

In obstetric cases, where operative interference was necessary, analgesia of the genitals was secured immediately after the injection. The pains continued actively in most cases, and caused difficulty in manipulation, inhalation narcosis having to be employed in a case of turning to secure the necessary relaxation of the muscles. Analgesia was complete in 21 of 25 cases. In two cases of eclampsia it was observed that spinal analgesia had no effect upon the convulsions. The puncture presents more difficulty in parturient women than in others.

W. E. Fothergill.

Gonococcal Infections in Childhood.

Bidwell and Carpenter. *British Journal of Children's Diseases*, Vol. i., No. 10.

An extremely valuable group of cases illustrating the complications of gonorrhœal infection in female children is to be found in the above journal.

The first case is one of gonorrhœal salpingitis in a child aged 6 years reported by Leonard Bidwell. The patient had suffered for some time from a vulvo-vaginitis which there was good reason to believe was gonococcal in nature. Subsequently the right foot became swollen and tender, due to an acute teno-synovitis. This was incised and some clear fluid evacuated. A further examination showed that the vaginal discharge came from the os uteri. Three days after this she was seized with all the signs of a local peritonitis in the hypogastric region. An examination of the discharge proved the presence of the gonococcus. After a brief improvement her condition became worse and Bidwell decided to operate. A typical pyosalpinx on either side was found. Both tubes were removed and the child made a good recovery. At a later date the uterus was curetted as the discharge continued after the removal of the tubes. This procedure effected a permanent cure.

The second case is reported by George Carpenter. The patient was aged $3\frac{1}{2}$ years, and had had a discharge from the vagina for six weeks which exhibited gonococci on bacteriological examination. She developed pain and tenderness in the lower abdomen. A bimanual examination of the appendages being made through the rectum it was found that both appendages were apparently inflamed

and enlarged, especially the right. Under expectant treatment the signs of pelvic peritonitis subsided, and the tubal enlargements disappeared.

In the "abstracts from current literature" will be found epitomes of other cases.

Sebilleau (*Gazette des Hôpitaux*, March 8, 1904, p. 261) reports the case of two sisters, aged 12 and 6½ respectively, in whom all the signs of peritonitis followed gonorrhœal vaginitis. Both cases recovered in about a week.

Galvagno (*Archiv di patol. e. clin. infant*, 1903, p. 73) describes three similar cases, all of which recovered without operation.

Northrup (*Arch. of Pediatrics*, 1903, No. 12, p. 910) reports two cases in children, aged 11 and 9 years respectively; both had vulvo-vaginitis previously. The elder was operated on for supposed appendicitis, but pelvic peritonitis was found instead. The younger recovered without operation.

J. Comby (*Archiv. de méd. des enfants*, September, 1901, S. 13) records no less than eight cases which had come under his personal observation.

Favourable cases recover in from 24 to 36 hours, but there are all graduations of severity up to those exhibiting a general peritonitis terminating in death.

Kimball (*New York Medical Record*, November 14, 1903) records eight cases of gonorrhœal pyæmia with multiple arthritis in children under three months. Similar cases have been recorded by English observers.

Paulsen (*Münch med. Wochenschr.*, 1901, 25) describes gonorrhœal exanthemata in new-born children consisting of papules and bullæ, in which the gonococcus may be demonstrated.

A perusal of this very interesting and important series of cases makes it appear that gonorrhœal salpingitis in young children usually runs a benign course, the large majority terminating in complete recovery. Cases such as that reported by Bidwell appear to be rare. Galvagno advises rest, poultices, laxatives and iodide of potassium. Sebilleau warns against too readily opening the abdomen, as most cases recover completely without operation. All agree on the necessity of treating the vulvo-vaginitis. The success which attended curettage in Bidwell's remarkable case suggests that this operation might be more frequently undertaken in the stubborn vulvo-vaginitis met with so frequently in children.

VICTOR BONNEY.

The Systematic Employment of a continuous Stream of Oxygen Gas in cases of Abdominal Infection.

JAVOUX (A.). *Bulletin de la Soc. de Gynécol. et d'Obstet. de Belge.* Tome xv., No. 2.

JAVOUX in cases of secondary abdominal infection and where drainage is necessary employs, in addition, a continuous stream of oxygen through the abdominal cavity. Exact details of the mode of procedure are not given, but we gather from the illustration accompanying the article that the abdominal wound is closed except at its lower angle; here a gauze drain and a Nelaton's sound are passed deeply into the pelvic cavity, a rubber tube is attached to the sound and connected by its other end to a cylinder of oxygen, and by this means a continuous stream of the gas is led into the abdominal cavity. Two cases are recorded in which this procedure was followed. The first was a girl of 18 who was operated upon for pyosalpinx and cystic ovaries; the left ovary and tube were adherent to the intestine, rectum and mesentery, and after separation left a large raw surface which could not be covered in by peritoneum. Three days later symptoms of peritonitis were present, constant vomiting, abdominal pain, a raised temperature, and a frequent pulse. On the third day the constant stream of oxygen was commenced and continued for seven days. A gradual improvement took place and eventually the patient made a complete recovery.

The second case was one of salpingo-oöphoritis following delivery; during the operation the tube ruptured and pus escaped into the abdominal cavity. Drainage was employed, and the oxygen treatment commenced at once. No grave symptoms supervened. The treatment has also been used with success in infective endometritis.

HERBERT WILLIAMSON.

REPORTS OF SOCIETIES.

OBSTETRICAL SOCIETY OF LONDON.

Meeting, Wednesday, October 5th, 1904, EDWARD MALINS, M.D., F.R.C.P., *President, in the Chair.*

Dr. J. M. MUNRO KERR read a paper on CERTAIN DETAILS REGARDING THE OPERATION OF CÆSAREAN SECTION IN CASES OF CONTRACTED PELVIS, BASED UPON A SERIES OF THIRTY CASES.

The author considers first the maternal mortality which, in his own cases, with two deaths, works out at 6·6 per cent. He then considers morbidity, as based upon a temperature of 100·5° on more than one occasion, and finds it is 26 per cent. The two fatal cases are detailed. In one the patient died on the fifth day; the *post-mortem* examination revealing the existence of septic peritonitis. In the other the patient died the day after operation of collapse. At the *post-mortem* examination a large quantity of blood was present in the abdominal cavity, and two or three of the uterine stitches were found untied.

The author then discusses the three different methods of treating the uterus after removing the child:—(*a*) Removal of the uterus by supra-vaginal hysterectomy; (*b*) Retention of the uterus and sterilisation by resection of the tubes; (*c*) Retention of the uterus without sterilisation—the conservative Cæsarean section. From the statistics of himself and others he comes to the conclusion that the best results are obtained by supra-vaginal hysterectomy; there is little time for preparing patients for operation.

The arguments for and against the conservative operation are considered—(*a*) From the ethical standpoint; (*b*) from the standpoint of the danger to the patient of the repeated operation; (*c*) from the standpoint of the danger of rupture of the uterus in a subsequent pregnancy. From a full consideration of these, he believes that with patients who come under one's care before labour, the conservative operation in a large number of cases is indicated.

Finally, such matters as the preparation of the patient, the time for operating, the controlling of hæmorrhage, and the suturing the uterus are briefly referred to.

The PRESIDENT referred to local influences which accounted for a large number of cases in particular localities. Twenty years elapsed between his first case and a second requiring Cæsarean section for pelvic deformity. Two years ago he had performed the operation six times in fifteen months. Four of these were for contracted pelvis, two for carcinoma. All the cases recovered from the operation and all the children were delivered alive.

Dr. G. E. HERMAN considered that Cæsarean section, when performed early, was the simplest and easiest of all abdominal operations, because the parts concerned were healthy and normal: there were none of the difficulties that were sometimes met with in the removal of tumours. Cæsarean section, performed early, ought to have no mortality at all, and was a safe operation, but it was not so if postponed until the patient

had been exhausted by protracted labour. He thought that, for statistical purposes, the cases should be divided into two groups. He considered that it was for the patient to decide whether she would be sterilised or not, and that the way to do it was to remove the uterus.

Dr. W. S. A. Griffith stated that there must be many operators who, like himself, had not published results, because they felt that the operation of Cæsarean section by competent operators for contracted pelvis under favourable circumstances should have no mortality, and he believed that he had not lost a single case. He did not think a vaginal douche at all necessary in cases in which there was no evidence of infective inflammation. As regards sterilisation of the patient, he had invariably done it by ligature of the tubes with fine silk.

Dr. Amand Routh agreed with Dr. Herman as to the advisability of dividing the cases into two groups. As regards the choice of operation, cases should be divided into two classes: (1) where the chance of another child is desired; (2) where it is decided to prevent further conception. In the first class the risks should be placed fully before those interested and if they still desired it, a conservative Cæsarean section should be performed. Such risks were briefly: secondary hæmorrhage and sepsis after the primary operation, yielding of the cicatrix and rupture during the next pregnancy, an 8 per cent. mortality in repeated Cæsarean section, and the possibility of a disadvantageous environment when next at full term. If sterilisation were decided upon, he held that removal of the ovaries was not advisable owing to the proved value of their internal secretion, and that resection of the tubes did not always cause sterility, and he considered that the claims of hysterectomy as a means of sterilisation should in each case be seriously considered, owing to its smaller mortality, the ease of the operation, the lessened risk of secondary hæmorrhage and sepsis, and the certainty of sterilisation.

Dr. Herbert R. Spencer referred to the diminishing mortality from Cæsarean section. His own experience of the operation was limited to eight cases (six with contracted pelvis and two with obstruction by scars): the patients all recovered. He had also performed the operation four times for tumour: one of the patients died with kidney disease. In all cases of simple contracted pelvis which were not infected he performed the conservative operation without sterilisation of the patient: for tumours and for infected uterus, and for uncontrollable hæmorrhage hysterectomy was sometimes required. He thought that as the cervix was likely to be implicated in infected cases it would be better to remove the whole uterus by total abdominal hysterectomy. He held the opinion that the question of sterilisation should be decided entirely by the doctor, and that his duty was to deliver the woman and restore her as nearly as possible to a natural condition. If the patient became pregnant again the responsibility was not the doctor's, whose duty was to repeat the Cæsarean section, which experience showed to be very safe. He thought it was not the business of a doctor to advise the use of preventitives. With regard to the sutures employed in the conservative operation he preferred silk owing to the safety of the knot.

Dr. C. J. Cullingworth said that he had altered his opinion on the ethics of sterilisation, and was now in agreement with Dr. Spencer on the subject. A woman possessing one living child might consent or even ask to be sterilized, rather than have again to face a serious operation; but, supposing her one child died, she might deeply regret having submitted to sterilisation. Besides, a patient's husband might die and the fact of

her incapacity to bear a child might stand in the way of a second marriage. It had been shown that there was little, if any, more risk in a second or third Cæsarean operation. He considered that undue stress had been laid by the author on danger of infection from the vagina. He doubted the soundness of the advice, emphasised in every text-book, to avoid the *mucosa* in suturing the uterine wound. He considered catgut sutures preferable to others which were non-absorbable.

Dr. MUNRO KERR, in reply, pointed out that the prevalence of rickets among the working classes accounted for the large number of Cæsarean sections in Glasgow. He saw no great disadvantage in including the *mucosa*, and thought it was of great importance to stitch deeply and to include the whole thickness of the uterine wall in the suture. He thought it likely that if the sutures were tied very tightly the wound might be partially deprived of its blood supply and that a less firm cicatrix might result.

SPECIMENS.

Dr. HERBERT WILLIAMSON showed a *section of the wall of an ovarian dermoid showing giant cells.*

Dr. LOCKYER showed a *carcinoma uteri secondary to carcinoma of both ovaries.*

Dr. HANDFIELD-JONES showed (1) *cancer and fibroids in the body of the uterus;* (2) *fibroid of uterus with cystic degeneration of the surrounding tissues.*

BRITISH GYNÆCOLOGICAL SOCIETY.

Meeting, October 13th, 1904, Professor JOHN W. TAYLOR, *President, in the Chair.*

Dr. BEDFORD FENWICK showed a *sac removed from a single woman of 46,* which he took to be an ectopic gestation. At his suggestion it was referred to a committee for pathological examination.

Dr. FREDERICK EDGE showed (1) *a microscopical section from a glandular carcinoma of both ovaries removed with perfect immediate result but with fatal recurrence within four months;* also (2) a *large many-lobed myomatous uterus successfully removed by supra-vaginal hysterectomy,* and read notes of both cases.

Mrs. SCHARLIEB, M.D., mentioned a *case of recurrence and death about six months after the removal of bilateral ovarian malignant growths.*

Mr. FURNEAUX JORDAN showed (1) a *cystoma of the left ovary removed by the vaginal way from a pregnant woman without interfering with the pregnancy;* and (2) a *double tubercular pyosalpinx.*

Dr. WILLIAM DUNCAN said that ovarian tumours complicating pregnancy should be removed at whatever time they were detected, but insisted in the superior advantage of operating from the abdomen.

The PRESIDENT said that in pregnant women ovarian fluctuating cysts which were not dermoids were hardly ever adherent, and especially if they blocked the pelvis below the pregnancy, were much more satisfactorily dealt with by the vagina.

Dr. MACNAUGHTON JONES pointed out that the best time for removing such tumours was from the second to the fourth month.

Dr. TENNISON COLLINS preferred the abdominal operation.

Dr. BEDFORD FENWICK had found that the removal of tubercular pelvic disease had been followed by such improvement in the course of existing pulmonary tuberculosis that he considered that in young women whose lungs were affected, if there were any symptoms of pelvic disease, the question of an early operation merited grave consideration.

The PRESIDENT agreed with Dr. Edge and Mr. Jordan that the view taken by Dr. Fenwick was too hopeful and that the prognosis in such cases was very doubtful.

Dr. WILLIAM DUNCAN showed a *uterus with cancer of the body* which, owing to the narrowness of the vagina, the extreme obesity of the patient, and to satisfactory elevation of the pelvis not being obtainable, he had removed by a combined abdominal and vaginal operation.

Mr. BOWREMAN JESSETT and Dr. F. A. PURCELL pointed out the great help to be obtained by deep paravaginal incisions in such cases known now as Schuchardt's incisions, but which they claimed they had developed independently at the Cancer Hospital.

Dr. MACNAUGHTON-JONES showed (1) a *microscopic section of glandular endometritis*, and (2) a *section of congenital ovarian cystoma from a child during delivery* which he had been given by Professor Schroeder, of Bonn.

Mr. CHRISTOPHER MARTIN read a paper on THE TREATMENT OF INTRACTABLE PROLAPSE BY EXTIRPATION OF THE UTERUS AND VAGINA. He described the technique of his operation (*v. British Medical Journal*, 1901, ii., October 5) and mentioned the similar operation independently devised by Edebohls, of New York, and gave details of the four cases in which he has now performed the operation with excellent results. He does not recommend his method except in cases in which the patient's discomfort is extreme and after other and milder measures have been tried in vain, for the operation is long, tedious and bloody, attended with considerable shock, and not free from danger of accidentally wounding the ureters, bladder or rectum; moreover, convalescence is slow, and in all his cases had been complicated by deeply-seated suppuration. The ultimate results, however, were very satisfactory, and in future he hopes he may be able to avoid such suppuration, which he considers the chief drawback to his method, by greater care in the disinfection of the field of operation, and the arrest of hæmorrhage, by the use of drainage tubes and by perfectly sterile, absorbable sutures.

The discussion of the paper was adjourned.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

Meeting at the Medical Institution, Liverpool, Friday October 21st, 1904,
DR. W. J. SINCLAIR, *President, in the Chair.*

Dr. LLOYD-ROBERTS (Manchester) exhibited an *improved needle-holder*, the prototype of which had been in use at St. Mary's Hospital for 20 or 30 years. It carried a needle the eye of which was placed at the point, and thus permitted great rapidity in use.

Dr. R. FAVELL (Sheffield) showed two specimens, both interesting, from the fact that the appendix vermiformis had been found adherent to each:

(1) *Dermoid of ovary* which was fixed by adhesions in front of the uterus; (2) *unruptured tubal gestation*, removed from a patient who had been married for six years without issue. In this case the appendix was enlarged and thickened. Dr. Favell referred to Howard Kelly's paper on the connection of the appendix with pelvic conditions, in which 115 cases are tabulated.

Dr. FOTHERGILL (Manchester) showed a water-colour drawing of a *fibroid tumour of the uterus*, painted immediately after the growth had been cut into, in order to illustrate an early stage in the cystic degeneration of fibroids. The tumour sprang from the posterior wall of the uterus, and on section it presented a brilliant combination of yellow, green and blue areas, each representing a loculus filled with colloid material which rapidly drained away.

Dr. FOTHERGILL also showed the smaller of a pair of *adenomatous ovaries*, with microscopic sections. The patient was aged 60, and had an enormously enlarged abdomen. She had partial intestinal obstruction and had lost flesh during the past few months. Treatment for dropsy had been carried out, but a solid tumour was discovered three weeks before operation. At operation a quantity of serous fluid escaped and a much degenerated solid tumour of the left ovary was found. Its extensive adhesion to bowel rendered piecemeal removal necessary, five or six fragments which could not be separated being left attached to intestine. Behind the uterus was a mass composed of small intestine and omentum matted together; this could not be dealt with in any way. The right ovary was represented by a small lobed tumour of the size of a hen's egg. This was removed and carefully examined, the portions of the larger growth being too much degenerated to be of use for microscopic purposes. The smaller ovary proved to be a solid adenoma, the acini of which were lined by a single layer of columnar epithelium.

Expressions of opinion were invited as to the prognosis in this case. Four months had elapsed since the operation, and the patient's health remained good. It was well known that after the removal of the primary tumour in some cases of papillomatous cysts of the ovary masses of new growth left on the surface of the peritoneum disappear completely. In this case, however, the new growth was distinctly adenomatous, not papillomatous. From the pathological point of view, Dr, Fothergill thought too little was said in the text-books regarding solid ovarian tumours. Adenomatous cysts are usually dealt with, but solid adenomata are sometimes not even mentioned.

Dr. FOTHERGILL also showed a water-colour sketch of a *cyst* which had developed under the lateral vaginal wall and hung completely outside the vulva. It had been extra-vulvar for over eight years, during which time the patient had had several children.

Dr. LLOYD ROBERTS considered it was not possible to give a prognosis as to the malignant nature of the ovarian adenoma.

Dr. W. WALTER asked if the patient had been examined recently. If it were found that the mass behind the uterus was diminishing in size, the probability was that the malignant element could be dismissed from consideration.

Dr. MURRAY CAIRNS (Liverpool) showed a fœtus with *congenital maldevelopment of the extremities*. Intra-uterine rickets was suggested as the probable cause of the deformity.

Dr. DEANS (Ramsbottom) described a even more marked instance of the same condition which had come under his observation.

Dr. Arnold Lea believed that the condition was simply one of fœtus retro-flexus.

Drs. Fothergill and E. O. Croft (Leeds) made remarks, and Dr. Cairns, in replying, said there had been no difficulty in labour.

Dr. E. Emrys Roberts (Liverpool) gave a lantern demonstration illustrating the first stage of *implantation of the ovum* of the guinea-pig. A series of slides photographed from microscopic preparations showed clearly the advance of the ovum into the decidua, and the change in the cells of the latter as the process went on.

Dr. Arnold Lea (Manchester) read a paper on a case of Rupture of the Parturient Uterus. The patient, aged 24, was admitted to the Maternity Hospital at 6 a.m. on September 17, on account of sudden profuse hæmorrhage due to placenta prævia. The condition was then good, the pulse being 104 and the temperature normal. Pregnancy had advanced to 7½ months, the head lay above the brim, but no heart sounds could be detected. The os admitted a finger, the membranes were unruptured and part of the placenta could be felt to be detached. No hæmorrhage and no pain. At 2 p.m. a de Ribes' bag was placed by the house surgeon, at Dr. Lea's request. At 7 p.m., although the patient had few pains, the pulse had gone up to 124 per minute. Dr. Lea arrived shortly afterwards, and found the condition fairly good. The bag was removed and external bipolar version was performed under anæsthesia, the hand not being inserted into the uterus. A macerated fœtus was readily extracted. The pulse became very rapid and the patient pallid, and slight hæmorrhage occurred. The placenta was easily expressed, and the uterus appeared to contract well. Examination showed a deep tear in the left side of the cervix; this was sutured. When returned to bed the patient was conscious and comfortable. Her pulse remained quick, 130—134. A quarter of a grain of morphia was given and some saline solution with an ounce of brandy injected into the rectum. Half an hour later the patient became suddenly blanched, the pulse failed altogether and death occurred in five minutes, obviously from internal hæmorrhage. There was no hæmorrhage from the vagina, and the uterus appeared to be firmly contracted. *Autopsy*, 12 hours later, disclosed about a pint of blood in the peritoneal cavity; a rent in the posterior layer of the left broad ligament; a tear three inches in length in the lower uterine segment; a huge hæmatoma in the left broad ligament. The uterus was pale throughout, and the placental site thinned; there was no evidence of a retraction ring. Microscopically, the uterine tissues do not differ markedly from other examples of puerperal uteri.

Discussing the causation of the rupture, Dr. Lea said that there was presumptive evidence of syphilis, the three former pregnancies having terminated prematurely by the birth of dead children in two instances, and the other child died soon after it was born. Further, the rupture occurred at the placental site. He was of opinion that these were the two predisposing factors and that the rupture occurred spontaneously whilst the bag was *in situ* leading to the formation of a hæmatoma. He thought that the tear was incomplete at first, and that version and extraction had led to its being made complete by *sudden* rupture of the posterior layer of the broad ligament. Of the symptoms described as being usually present in incomplete rupture, the only one present was the increase of pulse rate, and owing to the severe loss of blood sustained by the patient from the placental condition, sufficient stress was not laid on this. Had the rupture been recognised at the time of delivery, Dr. Lea remarked

that he thought the proper treatment would have been to pack with gauze.

Dr. LLOYD ROBERTS, in commenting on the case, thought that everything possible had been done.

The PRESIDENT inclined to the view that the de Ribes' bag had been the cause of the tear, either during its introduction or whilst it lay *in situ* in the uterus.

Dr. W. WALTER (Manchester) thought the case illustrated the risk of de Ribes' bag. He had known of two cases in which the bag disappeared entirely into the uterus. It was also necessary, when employing this bag, to be absolutely certain as to the quantity of water pumped into it.

Dr. W. K. WALLS had known of two similar cases, and considered that the delivery, and not the bag, was responsible for the tear.

Dr. LEA briefly replied.

Dr. W. K. WALLS (Manchester) read the notes of a case of large VENTRAL HERNIA which was occupied by a large mass of multiple uterine fibroids. The patient was a married woman, aged 44; no pregnancies; menopause at 35. History of operation (nature undetermined) five years previously. The hernia was about the size "of a boy's head," and its skin covering was ulcerated in several places. A large solid mass lay within the hernia, and behind it a large hard mass extended from pubis to umbilicus. *Per vaginam:* Cervix drawn up, so that it could only be felt with difficulty. The uterus appeared to be involved in the mass above. At operation the hernial sac was found to be occupied by a mass of multiple fibroids (about twelve) of the uterus, varying in size from a hen's egg to an orange. These were enucleated, and then the uterus together with several remaining fibroids, was removed by supra-vaginal amputation. The right ovary was embedded in a mass of adhesions, and was not disturbed. The patient was somewhat collapsed at first, but she ultimately made a good recovery. The tumour weighed 11lbs.

Drs. LLOYD ROBERTS and T. B. GRIMSDALE discussed the case, and Dr. WALLS replied.

REVIEWS OF RECENT BOOKS.

THE PRACTICE OF OBSTETRICS, DESIGNED FOR THE USE OF STUDENTS AND PRACTITIONERS OF MEDICINE. By J. Clifton Edgar, Professor of Obstetrics in the Cornell University Medical College. Second edition. London: Rebman, Limited, 1904.

The reception accorded to this work has been so favourable that the second edition has appeared in an unusually short time. The first edition was reviewed in the March (1904) number of this JOURNAL, and the author tells us that it was exhausted within four months of the date of publication. The interval having been so short, comparatively little revision has been found necessary, but considerable alteration has been made in the section of "Pathological Pregnancy," where the four important disorders (1) Nausea and Vomiting, (2) Icterus, (3) Convulsions and Coma, (4) Eclampsia are now grouped together in a section entitled "Toxæmia of Pregnancy." A new chapter on Morbidity in the Puerperium has been added, and there have been numerous additions to and alterations made in the illustrations. The general points of Dr. Edgar's book have been too recently presented to our readers to require repetition now.

THE DISEASES OF WOMEN: A HANDBOOK FOR STUDENTS AND PRACTITIONERS. J. Bland-Sutton, F.R.C.S., and Arthur E. Giles, M.D. London and New York: Rebman, Ltd., 1904. Fourth Edition.

The authors of this well-known manual tell us that in the present edition they have managed to "incorporate much new matter without increasing the number of pages." We hope that this rare literary achievement will be as pleasing to their readers as it evidently is to the authors. We are not told what the new matter is; but we hope that none of the displaced sections will be missed. Our readers are already familiar with the general characters of the text-book, and they will remember that one of its most serious faults is lack of arrangement; the authors do not appear to have given much consideration to the general plan of their work, and a teacher who endeavoured to present the subject to a class of students in the order here followed would certainly fail in imparting an adequate amount of knowledge. Thus "Methods of Clinical Examination" are considered in Chapter 3, but the prominent "Gynæcological Symptoms" are not reached until Chapter 42, while "Diagnosis" is

considered in Chapters 46 and 47, and is thus entirely divorced from the methods of examination on which it chiefly depends.

On the whole, of course, this book continues to reflect mainly the personal views of the senior author, which are naturally expressed with finality and decision, because the object of the volume, as we are told in the preface, is to present the reader with the "essentials of the art." Of course the personal views of the authors are the "essentials" referred to; but gynæcology is young and even now in only the first stages of its development, and we cannot resist the conclusion that the value of their work to students and practitioners would have been enhanced by a more judicial method of presentation. But although for these reasons it is an unsafe guide to junior students, whose immediate aim is to pass a qualifying examination, it will continue to be read with interest and profit by senior students and practitioners.

PUBLICATIONS RECEIVED.

The Editor begs to acknowledge receipt of the following publications:—

"Beiträge zur Anatomie der Tubenschwangerschaft." D. FRITZ KERMANNER. *S. Karger, Berlin.*

"Introduction a l'ètude Clinique et à la Pratique des Accouchements." FARABÆUF and VARNIER. *S. Steinheil, Paris.*

"Wurmfortsatzentzundungen und Frauenleiden. THEODOR LANDAU. *A. Hirschwald, Berlin.*

"Fruchtabtreibung durch Gifte und Andere Mittel." D. LEWIN. *A. Hirschwald, Berlin.*

"Diseases of Women." BLAND-SUTTON and GILES. *Rebman, Ltd., London and New York.* Fourth Edition.

"Practice of Obstetrics." CLIFTON EDGAR. *Rebman, Ltd., London and New York.*

"Geburtshilfe: eine Einführung in die Praxis. HEINRICH FRITSCH. *S. Hirzel, Leipsig.*

"Essentials of Obstetrics." J. W. BALLANTYNE. *W. Green and Sons, Edinburgh.*

"The Cancer Problem in a Nutshell." ROBERT BELL. *Baillière, Tindall, and Cox, London.*

"Deaths in Childbed: A Preventable Mortality." WILLIAMS. *Lewis, London.*

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